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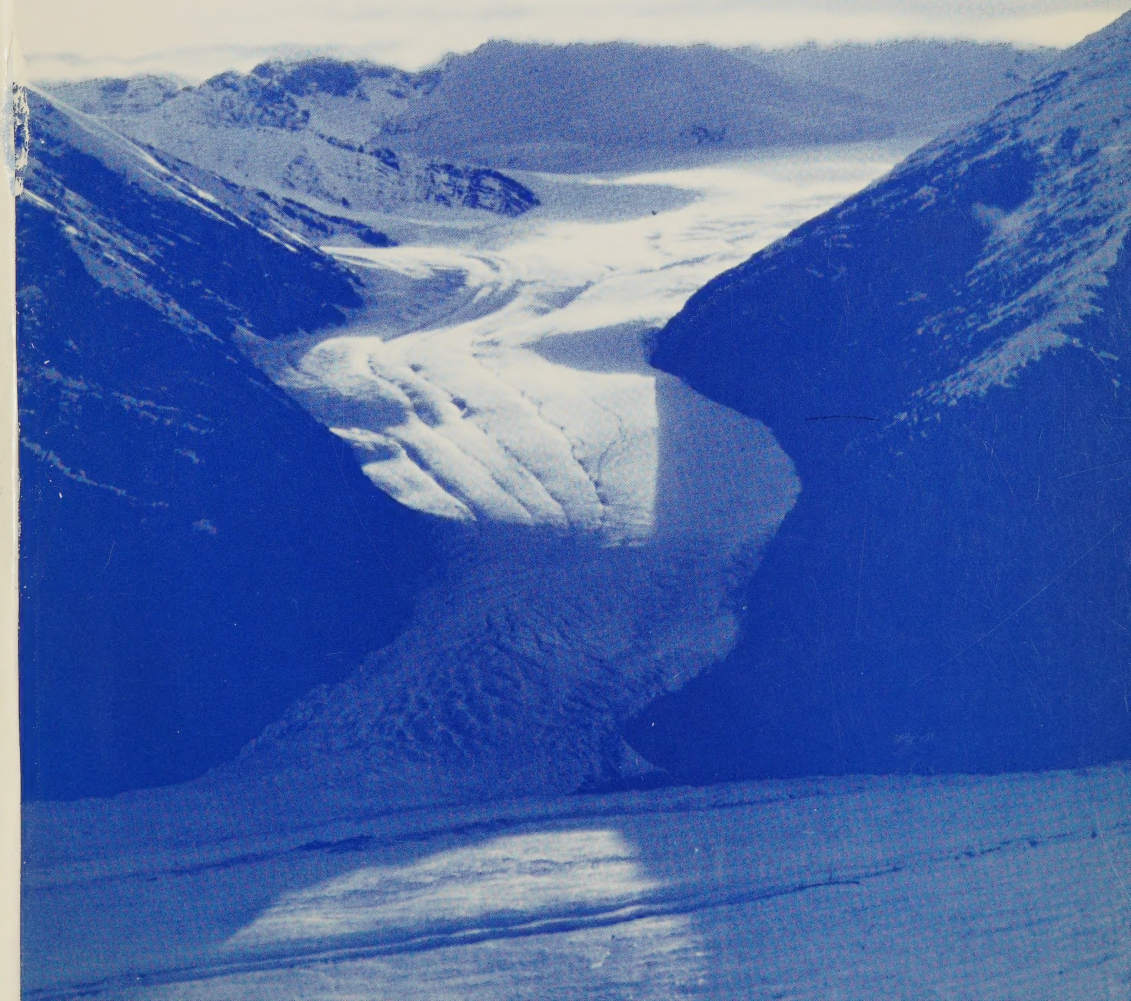
Government  
Publications

# 1981-1982 Government Activities in the North

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# Government Activities in the North 1981-1982

1981-1982 Report and 1982-1983 Plans  
Indian Affairs and Northern Development

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Minister of Supply and Services Canada

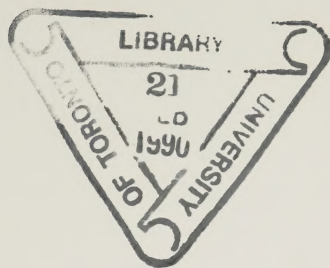




As Minister charged with the responsibility for co-ordinating government policy and its application in the North, I am pleased to present the 1981-82 edition of *Government Activities in the North*. This publication, published annually, continues to be of great value to researchers and others who want to keep themselves informed about the role of Government in Canada's North, as it is the only available consolidation combining reports of both federal and territorial government activities in the Yukon and Northwest Territories.

To describe the Government's role in the North as clearly as possible, this report is in narrative form. A companion publication entitled *Annual Northern Expenditure Plan*, also published by my department, indicates the level of expenditures applied against various categories relating to the Government's Northern objectives. Taken together, *Government Activities in the North* and *Annual Northern Expenditure Plan* record the nature and extent of government activities in Canada's North.

The Honourable John C. Munro,  
Minister of Indian Affairs and  
Northern Development.



# Introduction

## The Seven Northern Objectives

- 1 Quality of Life — To provide for a higher standard of living, quality of life, and equality of opportunity for northern residents by methods which are compatible with their own preferences and aspirations.
- 2 Economic Growth — To encourage viable economic development within the regions of the northern territories so as to realize their potential contribution to the national economy and the material well-being of Canadians.
- 3 Sovereignty and Security — To maintain Canadian sovereignty and security in the North.
- 4 Protection of the Environment — To maintain and enhance the northern environment with due consideration to economic and social development.
- 5 Evolution of Government — To further the evolution of self-government in the northern territories.
- 6 Social and Cultural Development — To realize the potential contribution of the northern territories to the social and cultural development of Canada.
- 7 Leisure and Recreation — To develop fully the leisure and recreational opportunities in the northern territories.

It will be noted that, while there are seven northern objectives, there are actually eight categories of expenditure. The eighth category is "administration and support." Agency expenditures are allocated to administration and support when they contribute to the northern objectives by supporting other activities which contribute to the objectives.

The 1981-82 edition of *Government Activities in the North* is published in both official languages by the Department of Indian and Northern Affairs Canada.

This publication reports annually on government activities in the Yukon and Northwest Territories. In this report, federal departments, agencies, crown corporations and both territorial governments, outline northern responsibilities, review past year's activities and project plans for the fiscal year 1982-83.

This year's edition includes a very brief indication of the 1981-82 spending forecast for each department<sup>1</sup> and shows total direct northern spending as well as spending directed toward specific northern objectives. The seven northern objectives established by the federal government in 1971 are shown elsewhere on this page.

Much of the material used under Plans for 1982-83 had to be assembled in the latter part of the fiscal year 1981-82. By the time this publication is released, many of these will be accomplishments, while others will have been modified or abandoned. As a result, they are treated throughout as being in the future.

*Government Activities in the North* is a companion report to the publication *Annual Northern Expenditure Plan*. Together they form a complete source of information on all aspects of government activity in the North.

Both these publications are available from the Publishing Division, Department of Indian and Northern Affairs Canada.

<sup>1</sup> Applies only to those departments which provide input to the Annual Northern Expenditure Plan.



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Federal  
Departments  
and Agencies



# Department of Agriculture

## **Review 1981-82**

The Directorate is carrying out a project entitled "Arctic Fox Studies: Rabies Infection and Age Structure from Trapline Returns". Brains from trapped Arctic Foxes are examined for rabies antigen and the age of the animals is determined by examining their teeth. Last year, 96 per cent of the submissions were from animals less than one year old, and only two out of 408 submission were positive. It is expected that this project will be terminated in 1982-83.

## **Plans for 1982-83**

Work for 1982-83 will include a preliminary study to examine some aspects of brucellosis, tuberculosis, and anthrax in bison. The incidence of these diseases and these potential for spreading to domestic livestock as northern development progresses, will be investigated.

## **Research Branch**

### *Land Resource Research Institute*

#### **Responsibilities**

The institute is responsible for providing technical expertise for soil and vegetation surveys and for carrying out soil characterization and soil inventories in the North.

## **Review 1981-82**

At the request of Environment Canada, the Institute carried out a soil inventory on the Arctic Islands in the Viscount Melville Sound area. A 1:1 000 000 scale soil landscape map of the area was prepared using satellite imagery for interpretation.

The National Museums of Canada requested a study of soils in the Old Crow area of the Yukon. The purpose of this study was to characterize the soils of both the archaeological excavation to aid in the archaeological interpretation of the sites and to characterize the paleo-environment of the area.

Technical and correlation support were provided for the Macmillan Pass resource mapping project of the Yukon Land Resource Inventory Group. In addition, the Land Resource Institute's soil laboratory is analyzing 354 soil samples collected during this field season.

The monitoring of soil temperatures continued at eight sites in the Inuvik-Arctic Red River area. The objectives of this study are to characterize the soil temperature regime, the thermal regime of the active layer, and the high sub-Arctic soil climatic region. The first two years of soil temperature data were analyzed and the results are to be published in the forthcoming book entitled *Northern Ecology and Resource Management*.

## **Biosystematics Research Institute**

## **Review 1981-82**

An entomologist, an arachnologist, and a botanist carried out extensive surveys of insects, spiders, and vascular plants in the Yukon Territory. Several scientific papers dealing with specimens collected during recent years were published, and substantial progress was made in preparing major faunistic treatments of several families of insects and arachnids in Northern Canada and a flora of the Yukon. Scientists from the Institute contributed substantially to the volume *Arctic Arthropods* by H.V. Danks, published by the Entomological Society of Canada.

## **Food Production and Inspection Branch**

### *Meat Hygiene Division*

#### **Review 1981-82**

The annual slaughter of reindeer, usually conducted in February or March, by the firm "Canadian Reindeer (1978) Limited" of Tuktoyaktuk, Northwest Territories, was carried out in early March 1982. Two veterinary inspectors from the Calgary office were assigned to inspect the carcasses and monitor the cleanliness of the Company's operations.

The Division is reviewing a proposal by the Committee for Original Peoples' Entitlement to provide inspection for muskoxen, and possibly caribou, in the future.

The Meat Hygiene Division is co-operating with people in the North to enable them to slaughter and process local animals for distribution to potential domestic and foreign export markets.

## **Health of Animals Directorate**

#### **Responsibilities**

Under the Animal Disease and Protection Act, Agriculture Canada is responsible for eradicating animal diseases that can be transmitted to domestic animals, particularly to those used for food. Because the number of domestic animals is very limited in the North, the Directorate's present activities relating to the North are very small. However, it hopes to be more active in the future, particularly as various agencies and non-government organizations seem to be more and more interested in the farming of game animals in the sub-Arctic regions.

# Canada Mortgage and Housing Corporation

This report is compiled for the operating year January 1 to December 31, 1981.

## ***Responsibilities***

Canada Mortgage and Housing Corporation (CMHC) is responsible for housing and other programs under the National Housing Act. It insures residential mortgage loans made by approved lenders and provides direct financing to the Territorial housing corporations and private non-profit organizations for new construction and for rehabilitating existing houses. Branch offices in Whitehorse and Yellowknife administer the Corporation's day-to-day activities.

## ***Review 1981***

### *Yukon*

In 1981, CMHC introduced the Rural Residential Rehabilitation Assistance Program (RRAP) into the Yukon. The Council for Yukon Indians is the "delivery agent" (Client Representative Group) for Rural RRAP and for the Emergency Repair Program (ERP). During the year, both these Programs were used to improve and repair substandard housing. Twenty-nine homes were repaired under the Emergency Repair Program. A total of \$26 200 of the Corporation's funds were used to carry out this work.

Under Rural RRAP \$4 000 was committed to rehabilitate one house. Rehabilitation of three other houses was in the process of being approved. In addition, through the RRAP — DIAND funding for status Indians, three units in Liard were repaired at a total cost to CMHC of \$12 000. The Council for Yukon Indians (CYI) receives an annual sustaining grant for its housing department to help in providing housing for natives. In 1981, CYI received a grant of \$96 468. This money permitted considerable work to be done on developing a system for providing new housing under the Rural and Native Housing Program.

The Atlin, BC Indian Band built two houses under the private non-profit program with the Band Manager acting as the general contractor. The project was jointly funded by CMHC and DIAND. The Corporation committed \$96 000 in capital funding plus an annual subsidy of \$20 000 to this project.

During 1981, CMHC provided \$6.5 million in NHA loan insurance on 180 units, including \$2.0 million in loan insurance on one town housing project. The Corporation also provided a \$73 000 direct loan in a remote area outside local Approved Lender's jurisdiction. Under the Canadian Home Insulation Program (CHIP), 431 grants totalling \$181 000 were made to homeowners to assist them in upgrading the insulation in their homes.



Inuit Non-Profit Housing Corporation Project in Lake Harbour

*Northwest Territories*

During 1981, 253 housing units were financed under the National Housing Act. Of these units, 208 were financed directly by CMHC under the Northwest Territories Housing Corporation (NWTHC) Program. This Program was directed toward providing subsidized rental housing in many of the smaller and isolated communities in the Territories. It included the construction of 75 new units and the major rehabilitation of 133 older houses. CMHC funding to the NWTHC in 1981 totalled \$12 million. In addition, CMHC handled 36 NHA insured loans — 28 for owner-occupied, and 8 for rental units.

Energy-conserving features and technology were incorporated in seven housing units — one each in seven communities in the Keewatin Region. These houses were part of a special demonstration project, and the Corporation has started to monitor energy savings and living comfort in the units. Residents from the communities participated at the design stage and are also involved in the ongoing monitoring work.

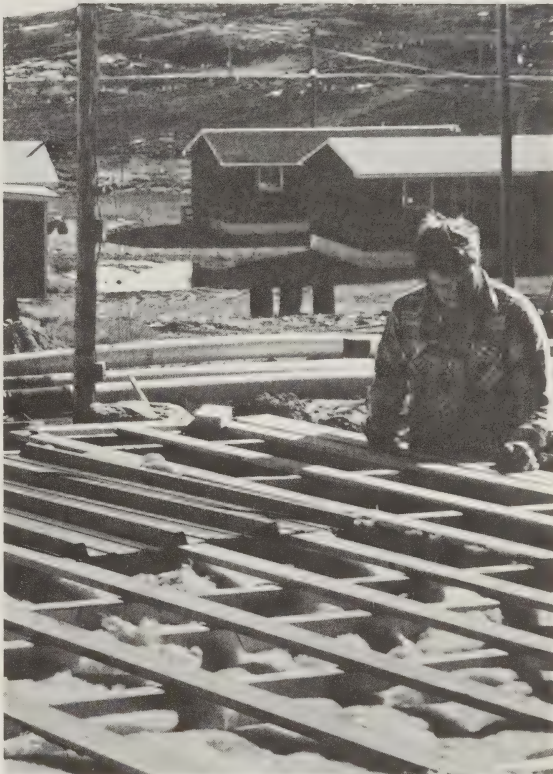
CMHC and NWTHC jointly sponsored two district housing conferences held in Inuvik in October and Hay River in November. These conferences brought together people from the smaller communities who are involved in managing public rental housing. The meetings provided an opportunity to exchange information, identify problems and propose solutions in an attempt to improve housing conditions and management techniques. CMHC also funded a Dene/Métis housing conference in Yellowknife in November.

Under the Canadian Home Insulation Program, 422 grants totalling \$185 425 were made to homeowners to assist them in upgrading the insulation in their homes. During 1981, CMHC and NWTHC undertook a special Emergency Repair Program. A total of 52 of the older northern rental units in a number of smaller communities were upgraded and made more energy-efficient. In addition, 81 units in the Mackenzie Valley were upgraded through the co-operation of the Mackenzie Valley Housing Association. CMHC's contribution was \$200 000 and \$221 037 for the 52 and 81 units respectively.

The Mackenzie Valley Housing Association also assisted CMHC with the delivery of native housing programs in the Mackenzie District. A sustaining grant of \$915 644 was made to the Association during 1981. Another sustaining grant of \$137 262 was made to the Inuit Non-Profit Housing Corporation (INPHC) to help it represent the interests of the Inuit population north of the tree line. The efforts of INPHC showed significant results in 1981 with projects in Tuktoyaktuk, Cape Dorset and Lake Harbour.

*Total Activity Approved — 1981*

	No. of Units	Amount \$ 000
Yukon (New and Existing)	183	6 698
(Rehab and Repair)	33	42
NWT (New and Existing)	125	9 756
(Rehab and Repair)	273	5 445



Rehabilitation work in Rankin Inlet: insulating tin roofs

Summary of Direct Northern Expenditures (000's)	\$	%
Total Forecast 1981/82	2 648	100.0
Expenditure by Northern Objective:		
Quality of Life	2 648	100.0

# Canada Post Corporation

The Western Region is responsible for postal service to communities in the Yukon, the District of Mackenzie and the District of Keewatin, as well as to Banks Island, Victoria Island, and the Boothia Peninsula in the District of Franklin. The post office at Sanikiluaq, Belcher Islands, is south of the 60th parallel, but since it is an island in Hudson Bay, it is served by the northern service. Mail for the Keewatin District from all parts of Canada is gathered in Churchill. Dispatches for the District of MacKenzie are centralized and processed at Edmonton. Mail for the Yukon, depending on the originating points, is centralized in either Edmonton or Vancouver.

## *Review for 1981-82*

Two new post offices were opened during the period. The first, at Lupin, Northwest Territories, provides service to people who work at Echo Bay's new mine on Contwoyto Lake. The second, Polaris, on Cornwallis Island, serves the employees of the Polaris mine operated by Cominco Ltd.

A new air service was established between Yellowknife and Frobisher Bay. It includes scheduled stops at Rankin Inlet. Another new international air service connects Frobisher Bay and Gothaab, Greenland. As a result of these services, Canada's first northern international exchange office was established at Frobisher Bay.

## *Plans for 1982-83*

It is likely that developments in oil, gas, and other natural resources will result in significant increases in the population of the North over the next few years. The growth in population will create a demand for increased mail service. The Canada Post Corporation will maintain its close contact with local agencies so that new postal services can be introduced to meet new needs as they arise.

## *Responsibilities*

On October 16, 1981, the Canada Post Corporation took over the operations of the Canadian mails from Canada Post. Like its predecessor, the newly formed Canada Post Corporation operates a large-scale processing and distribution business.

The Corporation provides a mail service at equal cost to all Canadians, not only along the well-established transportation networks in the south, but also to the remote areas north of 60 degrees latitude. There are now 81 post offices in the North.

Mail is delivered by a variety of means. For example, mail is delivered regularly by air to communities that have permanent, year-round air strips. In other locations, aircraft use ice strips in the winter months. In summer, these locations are served by either land routes or boat. Some northern residents receive their mail by "courtesy-bag" service; the Corporation processes the mail and places it in bags for mining companies or oil exploration companies to deliver to their personnel.

Two postal regions are responsible for mail service to the North. The Quebec Region is responsible for service to the eastern Arctic, with Montreal serving as the distribution centre. Mail originating in locations east of Winnipeg and addressed to Kuujjuag (electoral district of Manicouagan), Frobisher Bay, Hall Beach, or Resolute is sent to Montreal, where it is processed and then forwarded by air. Mail originating west of Winnipeg for the eastern Arctic is gathered in Edmonton for dispatch by air service to Resolute.

## **Summary of Direct Northern Expenditures (000's)**

	\$	%
<i>Total Forecast 1981/82</i>	11 370	100.0
<i>Expenditure by Northern Objective:</i>		
Quality of Life	5 685	50.0
Economic Growth	5 685	50.0

# Canadian Broadcasting Corporation

## Northern Quebec

On April 1, 1980, the Montreal production centre, which since 1958 had been the production centre for the entire Northern Service, began its first fiscal year as the centre for the new Quebec Northern Service.

This Service, comprising a dozen persons, immediately began to apply itself to increasing and diversifying its programs in Québec Inuit and Cree. In 1981-82, the Service added a two-hour program in both languages to its morning schedule. This addition brought the Service's weekly original production to about forty hours. The pan-northern program, *Isumavut*, a daily one-hour long phone-in show, continued with announcer-producer Elijah Ménarik. Ménarik also hosts the weekly television program *Tarqavut*, which has been produced in Montreal for the past ten years.

The year 1981-82 also saw CBC television transmitters installed in five main Inuit communities in Québec. A community radio package was set up in the Cree village of Lac Mistassini, and the Service began to work closely with the Attikamek-Montagnais radio production centre at the Huron Village. The Village's programs (one hour from Monday to Friday and two hours on Saturday) are broadcast on shortwave or by satellite, and then re-transmitted by twelve community stations.

The work of transcribing native music, which flourishes among Quebec's native peoples, gained new momentum with the recording of traditional Inuit music collected by the Museum of Man. As well, numerous Montagnais songs were recorded, as sung by the oldest members of the community.

Finally, the Québec Northern Service continued to work with the Department of Indian and Northern Affairs to provide training in radio production to native peoples.

The main news events and issues covered during the past year were the patriation of the Canadian constitution, the board elections for the Inuit Tapirisat of Canada, the visit of British Members of Parliament among the Cree, the inauguration of the new Indian village of Chisasibi, on James Bay and the problem of discrimination against Indian women.

## CBC Northern Service

### Responsibilities

The Northern Service of the Canadian Broadcasting Corporation was established in 1958 to provide a broadcasting service to meet the special needs of Inuit, Dene, Métis, and non-native northerners.

### Radio

There are five radio production centres in the North. Each produces programs for culturally and linguistically distinct audiences. Yellowknife, N.W.T. is the program centre for the Mackenzie region. Inuvik is the centre for the Delta, Frobisher Bay for the Baffin, Rankin Inlet for the Keewatin and Whitehorse for the Yukon.

Listeners in each of the sub-regions receive a combination of national and regional radio programs, delivered through earth or satellite networks and broadcast on local transmitters. CBC radio is available to 97 per cent of the people of the N.W.T. and to 92 per cent of the Yukon population, using either CBC-owned-and-operated equipment, or through community-owned affiliates.



Weekly production in Inuktitut of the weekly quarter hour TV program *Tarqavut* began in Radio-Canada Montreal about nine years ago. For many years this production by Marie Tessier-Lavigne was the only northern television program conducted in Inuktitut. Mary Atchison, an occasional program host, greets three Inuit guests during one of the program's features.

About half of the northern settlements have formed community radio societies, which have access to the local transmitter at specified times of the day for airing their own programs. The Northern Service has provided the community radio equipment to the larger settlements, while the Northwest Territories Government has a similar program for the smaller ones.

Whitehorse, Yellowknife, Inuvik, and Frobisher Bay produce daily northern newscasts. Distinct morning shows and current affairs programs also originate from each centre. A listener in Frobisher Bay, Baker Lake, or Rankin Inlet can listen to programs in Inuktitut and English, while a Yellowknife or Rae-Edzo audience can tune into Dogrib, English, Slavey, or Chipewyan programs. In the Delta, CBC programs are broadcast in English, Inuvialuktun, Hareskin, and Loucheux. In contrast, CBC in Whitehorse broadcasts to a largely English-speaking population of native and non-native Yukon listeners.

The Northern Service also operates a radio production unit at The Chateau Laurier in Ottawa. It provides news and current affairs items for use by the northern stations.

### **Review 1981-82**

The prolonged strike by NABET technicians and announcers had a marked effect on the operations of the Northern Service. Radio production was virtually shut down, although a reduced service of news, weather, and recorded music was maintained. Moreover, at the end of the strike a backlog of technical maintenance work had to be carried out.

In preparation for the N.W.T. plebiscite on division, news and current affairs staff at all locations contributed to six weeks of information programming that included historical perspectives, presentation of northern and southern viewpoints, and careful analysis of this historic issue. On two occasions, listeners throughout the North were invited to phone in on special open-line programs.

During the national constitutional debate, the entire Legislative Assembly of the N.W.T. travelled to Ottawa to lobby for aboriginal rights. The Northern Service produced a ninety-minute radio special simultaneously translated into the native languages, from the Ottawa production unit with Assembly members in the studio.

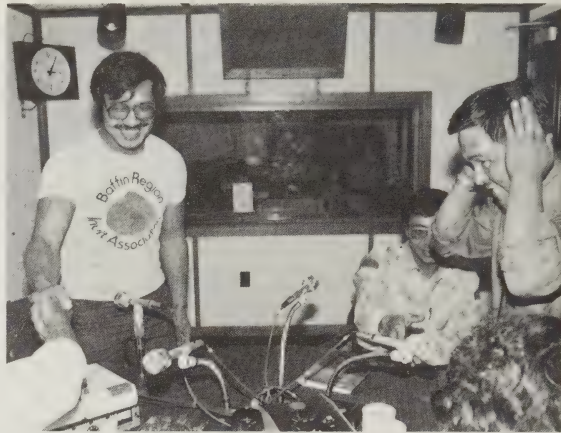
News and current affairs staff travelled widely to provide coverage of several key events, including the National Energy Board hearings, Beaufort Sea Environmental reviews, and the Inuit Tapirisat Annual Assembly in Nain, Labrador. An Inuit Services Committee of senior CBC Inuit staff was formed to oversee Inuktitut language programming for the Eastern Arctic and Keewatin regions, and to provide liaison with northern Quebec.

The Northern Service produced four long-playing record albums featuring northern musicians. These broadcast recordings are made available to radio stations and community access groups. Plans are underway to arrange for the commercial marketing of some of these albums.

A strong emphasis was maintained on staff training in a number of areas, including the continuation of intensive native language sessions for Inuit broadcasters.

The Northern Service provided both written and oral presentations to the Applebaum-Hebert Federal Cultural Policy Review Committee, outlining the effects of electronic media on northern cultures.

During the bi-annual Arctic Winter Games, held this time in Alaska, live daily broadcasts were produced in Fairbanks for distribution throughout the North.



"Tausonii" is produced in Frobisher Bay. Baffin Regional Inuit Association President Simon Awa (left) and the Deputy Mayor of Frobisher Bay Pauloosie Kilabuck (seated, right) came to the studio in September 1981 to talk about Inuit leadership. Co-host is Moses Atagoyuk, (right).

Under the CBC's Accelerated Coverage Plan, the N.W.T. community of Gjoa Haven was provided with CBC radio service, via satellite.

### **Plans for 1982-83**

At the end of 1982, all northern staff benefits (such as subsidized housing and isolated post allowances) will be subject to taxation. We will be working with other federal employers in order to prepare for the impact of this new legislation.

The Service expects to improve the Dene language program service from our Yellowknife and Inuvik production centres. Early in the new year, we will begin a new noon hour program from Inuvik. It will be broadcast simultaneously in Inuvialuktun and Hareskin. We will also be broadcasting a new afternoon multi-lingual information program for our Slavey, Dogrib, Chipewyan audience from Yellowknife.

We are adding an Inuktitut news and current affairs program service in our Ottawa Production Unit, to cover southern activities related to the North. Program material will be incorporated into existing programs and distributed to our Inuit audience from Frobisher Bay and Rankin Inlet. This service was scheduled for last year, but was delayed.

The Frobisher Bay Production Centre will be shifting from producing a bi-lingual English and Inuktitut morning show, to a unilingual new noon hour program co-hosted by both the Rankin and Frobisher Bay centres.

A Dene language broadcasters' training program (similar to the "PUUQ" program for our Inuit staff) will be introduced this summer in Yellowknife. The course will last one week and will cover a range of subjects, including language, cross-cultural awareness, and broadcasting skills. This course will be our first attempt at establishing specialized training for our Dene broadcasters.

The Northern Service will begin implementing a new recruitment and staff orientation system. Its objectives are, first, to recruit employees who are more suited to broadcasting work in the North and, second, to better equip current employees to do their jobs. New techniques in screening and selection, and more specific orientation and training, are the main elements of this system.

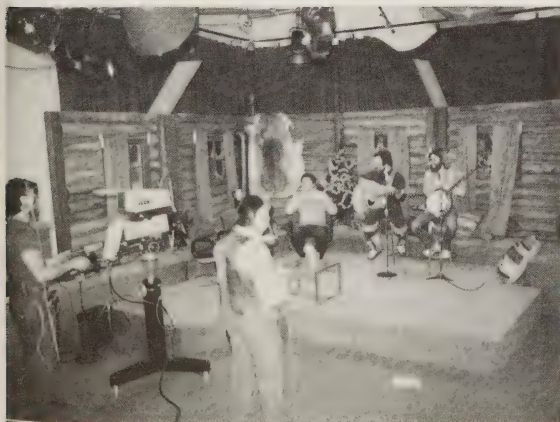
We are upgrading our Frobisher Bay radio AM signal from 250 watts to 1 kw. This additional power will greatly improve the quality of our signal to the community and surrounding areas.

The Northern Service is conducting a study of the full range of benefits provided to our employees in the North to ensure that staff are treated equitably in relation to the employees of other northern agencies.

#### *Television*

The Northern Service has a small production centre in Yellowknife with both film and electronic cameras and editing facilities. Program production includes in-studio and remote work. There are, however, no satellite "up-linking" facilities, with the result that all programming produced and recorded in Yellowknife must be shipped south to Toronto in order to be broadcast back to the North via Anik satellite.

This is the television studio in Yellowknife.



The Yellowknife centre produces a weekly half-hour television series and a number of special or feature programs annually. Television staff based in Ottawa arrange the scheduling and promotion of our programs and purchase programming from a variety of sources in Canada and internationally to be shown in the North. A production unit in Montreal produces "Tarqavut" a weekly 15-minute program in Inuktitut.

Like radio, CBC television is available to well over 90 per cent of northern households. However, beyond the small amount of television programming either produced or procured by the Northern Service as noted above, the television service consists of national network programs from southern Canada. The Northern Service does not have its own dedicated satellite channels for television distribution. It receives the network's main Maritime and Pacific channels and must share the regional time available in those channels with other regional television services in Eastern and Western Canada.

#### *Review 1981-82*

The Yellowknife-produced weekly series "Our Ways" was delayed three months from its normal fall season opening as a result of the NABET strike.

In November of 1981, the TV unit produced a special half-hour current affairs program on the constitutional debate, featuring the N.W.T. Legislative Assembly's dramatic visit to Ottawa.

Additional current affairs programming was produced toward the end of the year in preparation for the plebiscite on the division of the N.W.T. This material was broadcast in a series of six half-hour programs — three in English and three in Inuktitut.

During the Arctic Winter Games in Fairbanks, Alaska, the Northern Service offered daily television coverage to northern viewers. A remote production crew was sent to Alaska, and satellite facilities were used to relay the programs from Fairbanks to Toronto, and then back to the Canadian North.

The Northern Service expanded its working relationship with the Inuit in the eastern Arctic and northern Quebec by entering into a co-operative agreement with the Inuit Broadcasting Corporation (IBC). Under the terms of this agreement, the CBC makes available its satellite distribution network for specified times each week to allow IBC to transmit its own television programs to the North. IBC is an independent television production company, operated by the Inuit with funding from the federal government. It operates production facilities in Salluit (Quebec), Frobisher Bay and Baker Lake (N.W.T.). By the end of the year, IBC was producing approximately three hours of original television programming each week in Inuktitut. These programs were being transmitted to the North by satellite from Toronto, but plans were underway to establish a satellite transmitter in Frobisher Bay to allow for direct northern access to the distribution network.

An audience survey was conducted in two Baffin Island communities to assess the television viewing behaviour and preferences among Inuit in the eastern Arctic. In the West, community representatives from several settlements were invited to Yellowknife and Whitehorse to view and comment on samples of the Service's original television production. Through audience research and public screenings, the Northern Service obtains valuable information and feedback from viewers, which in turn helps the Service to plan and evaluate its work.

#### ***Plans for 1982-83***

We will be increasing our northern television production, in a modest way, beginning next fall. We will continue to produce our existing weekly current affairs program and will add a new weekly half-hour pan-northern current affairs show produced in our Yellowknife studios. The existing program will continue to reflect northern culture and to include native languages. However, its format will shift from a magazine-style format to a series of single-subject half-hour programs on film. The new current affairs program will deal with current issues in the political, economic and social areas.

Tarqavut production resources will be relocated from Montreal to Ottawa in the fall. We will begin producing this weekly Inuktitut program from the CBC Ottawa studios. This move will provide a more suitable location from which to cover southern activities either related or important to the North.

Our arrangement with the Inuit Broadcasting Corporation will continue, and we will provide access time on our satellite delivery system from the IBC's Frobisher Bay facility. Although we are able to accommodate the current volume of IBC's production, additional programming will be difficult to broadcast. Our delivery system is also the network's main "trunk line" for southern distribution, and our use is restricted to times when the network is inactive, usually outside of prime time.

We have scheduled a series of public meetings in the Baffin and Keewatin to gather audience feedback on our current programming and to prepare for our new pan-northern current affairs show. We expect to continue this form of evaluation and feedback with other groups as well.

#### **Summary of Direct Northern Expenditures (000's)**

	\$	%
<i>Total Forecast 1981/82</i>	11 239	100.0
<i>Expenditure by Northern Objective:</i>		
Social and Cultural Development	6 181	55.0
Quality of Life	3 934	35.0
Evolution of Government	562	5.0
Protection of the Environment	562	5.0

# Canadian National Railway

## Responsibilities

CN is responsible for providing transportation and telecommunication services to the North. Historically, this responsibility has entailed operating transportation services to mining and forest industries and to exploration and construction projects, as well as providing telecommunications to the residential and commercial sectors. Consultation services have also been provided for the logistical planning of pipelines, rail lines and other studies.

## Review 1981

Demand for CN's transportation services in 1981 was similar to that of the last few years. While traffic volumes still have not returned to the highs of the early and mid-1970's, they remain above the lows of 1978.

The major CN Rail Traffic originating in the Northwest Territories has continued to consist of lead-zinc concentrates from Pine Point Mines, Pine Point, N.W.T. Most of the rail traffic destined for the N.W.T. is used for northern community re-supply and for exploration work in the Beaufort Sea. These cargoes are transferred to barges at Hay River for shipment to points along the Mackenzie River System and the North Coast.

In 1981, CN's telecommunications subsidiary, NorthwestTel Inc. expanded and extended its operations in several areas.

Construction started on an upgrade project to expand the Whitehorse-Mount Berdoo (Carmacks) radio system from 300 to 960 voice channel capacity. Completion is scheduled for 1982.

Construction also started on a new microwave extension to the Alaska Panhandle, for communications traffic between Alaska and the lower 48 states of the U.S.A. Antenna tower and plant work commenced at Fraser (Carcross) and similar work was undertaken on the associated upgrade of the microwave system between Whitehorse and Beaver Creek.

The Hay River-Fort Providence microwave upgrade was completed in March 1981, providing an additional 960 voice channels.

In August 1981, a 120 channel tropospheric scatter radio relay system was brought into service between Hay River and Fort Smith. The system replaced an open wire pole line.

A new microwave system was placed in service in the Mackenzie Delta between Sunny and Hooper Island, for lease to Dome Petroleum Limited to carry off-shore traffic to that company's Tuktoyaktuk base camp.

A project to extend public mobile telephone service to Fort Ware was started. When it is completed in 1982, the service will work into the Fort Nelson centre.

At several locations, mechanical teleprinters for the Ministry of Transport were replaced by modern video display terminals and printers.

Automatic Number Identification (ANI) was installed at Dawson City, Norman Wells and Watson Lake, to facilitate direct dialing of long distance calls.

The telephone exchange at Faro was expanded from 800 to 1000 lines.

Preparatory work began on replacing the local and toll switching equipment at Fort Nelson.

New long distance toll switching equipment was placed in service at Hay River in June 1981. Most operator-handled traffic now is routed to the Whitehorse toll operator positions (TOPS).

A new 600 line electronic exchange was commissioned at Tuktoyaktuk, with a financial guarantee from Dome Petroleum Limited.

Equipment to provide touch-tone push button dialing service was installed at Cambridge Bay, Dawson City, Elsa, Aklavik, Rae, Fort McPherson, Norman Wells, and Tungsten.

The capacity of telephone exchanges at Dease Lake, Fort Liard, Mayo, Haines Junction and Pine Point was expanded during 1981.

Direct In-Dialing (DID) and Out-Dialing (DOD) equipment was placed in service at Wrigley, Enterprise and Fort Liard.

The installation of telephone exchanges and distribution cable was completed at Lac La Martre and Rae Lakes. Radio relay facilities are under construction with completion scheduled for the spring of 1982. This project, which is being carried out with financial assistance from the Department of Communications under the Northern Communications Assistance Program, will provide local and long distance telephone services to the two communities for the first time.

## Statistics at December 31, 1981

	Telephone Exchanges	Main Stations	Total Telephones
B.C.	12	3094	5419
Yukon	18	10248	16779
N.W.T.	33	12531	19802
Total	63	25873	42000

Communities	59
Direct Distance Dialing	99.9%
ANI	82.3%
Touch-tone Availability	91.5%

### ***Plans for 1982***

During 1981, Cadillac Explorations Limited has continued to develop its lead-zinc-silver property and smelter 160 km northwest of Fort Simpson in the Nahanni area. CN Rail expects to provide the transportation facilities for delivering the lead and zinc concentrates to southern Canadian smelters and export positions. Production is expected to begin in mid-1982 and, by 1983, volumes of approximately 91 000 tonnes are forecast.

In late 1982, CN Rail also expects to deliver construction materials for building Esso Resources' 30.5 cm oil pipeline from Norman Wells, N.W.T. to Zama Lake, Alberta.

Northwestel will continue to improve and expand its facilities in 1982. During the year, an upgrade in capacity of the microwave system between Whitehorse and Beaver Creek will be completed. A new microwave extension to the border of the Alaskan Panhandle near Fraser, B.C. will also be placed in service. This extension will permit the interchange of telephone traffic with Alascom Inc.

The microwave system between Whitehorse and Mount Berdoe will be expanded from 300 to 960 channels in 1982. Construction of a radio system from Dease Lake to Iskut will be started. Work on the system will be completed in 1983.

The Fort Smith telephone exchange will be replaced in 1982 with solid-state electronic equipment. The existing cross-bar exchange will be dismantled and used to expand similar exchanges at Norman Wells, Tungsten, Cassiar, Dawson City and Carcross.

Local and long distance telephone service will be provided in 1982 at Lac La Martre and Rae Lakes, and automatic number identification equipment will be installed at Haines Junction, Cambridge Bay and Tungsten.

# Canadian Transport Commission

## Aircraft groups according to weight

A to H	light to heavy
A-RW	rotating wing - light
C-RW	rotating wing - medium

## District of Keewatin

Public hearings were held in Rankin Inlet, N.W.T. and Churchill, Man. to consider the adequacy of commercial air service to, from and within the District of Keewatin and all related applications thereto.

## Authorities granted

### *Calm Air International Ltd.*

Approve an application for rescission of the continuing waiver granted to Lambair Ltd. in respect of its Class 4 licence to charter from a base at Churchill, Manitoba to freight forwarders obtaining a toll per unit.

Amend a Class 4, Group C licence to operate a charter service from a base at Rankin Inlet, N.W.T. by adding authority to use Group E aircraft, and direct that Rankin Inlet, N.W.T. be designated as an "open point" with respect to Class 4, Group E operations.

Authority to serve the additional points Churchill and Lynn Lake, Manitoba and Cullaton Lake, N.W.T., the licensee being restricted to the use of aircraft in Groups C and E.

### *Lambair Ltd.*

Amend a condition of a Class 4 licence to operate charter services from a base at Churchill, Manitoba by deleting the numerical and type restriction on its Group E operations.

### *Keewatin Air Ltd.*

Amend a licence which authorizes Class 4 charter and Class 7 specialty services with Groups A and B from a base at Rankin Inlet, N.W.T. by adding Group C.

## Yukon Territory and central and western Northwest Territories

Public hearings were held in Whitehorse, Y.T., Inuvik and Yellowknife, N.W.T., to consider the adequacy of commercial air services in the area formerly served by Northward Airlines Limited and to hear evidence pertaining to several applications for and notices of proposals of transfer of commercial air services in the Yukon Territory and the northwest Territories. In its decision, the ATC stated that "the commercial air service needs of the Yukon Territory and central and western Northwest Territories can best be provided by distributing the authorities among several carriers rather than concentrating much of the authority in the hands of one carrier."

## Authorities granted

### *Simpson Air Ltd. (The Northern Commuter)*

Amend a Class 3, Groups A, B and C licence to serve Fort Simpson, Fort Liard, Nahanni Butte and Wrigley, N.W.T., Fort Nelson, Fort St. John and Dawson Creek, B.C. by adding the point Yellowknife, N.W.T.

### *Ram Air Charter Ltd.*

Authority to operate a Class 3, Groups A and B service between Fort McPherson, Aklavik, Tuktoyaktuk and Inuvik, N.W.T. and Old Crow, Y.T.

## Air Transport Committee

### **Responsibilities**

The ATC licenses air carriers to provide commercial air services and provides economic regulation of air carriers. It also monitors the operations of commercial air services in Canada and advises the Minister of Transport on civil aviation matters.

### **Review 1981-82**

DEW line contracts were awarded to Pacific Western Airlines Limited (PWA) and Nordair Limited for the north-south and east-west airlifts respectively.

The following chart shows the classification system that the Commission uses in its licensing activities, described in subsequent paragraphs.

### **Classification**

Class:	Commercial service (domestic)
1	scheduled
2	regular specific point
3	specific point (consistent with traffic requirements)
4	charter
7	specialty
	Commercial service (international)
8	scheduled
9-2	regular specific point
9-4	charter

*Aklavik Flying Service Ltd.*

Authority to operate a Class 3, Groups B and C service between Inuvik, Fort McPherson, Aklavik, Tuktoyaktuk, Sachs Harbour, Cape Perry and Paulatuk, N.W.T.

*Nahanni Air Services Ltd.*

Authority to operate a Class 3, Groups A, B and C service between Norman Wells, Fort Franklin, Fort Good Hope, Fort Norman and Inuvik, N.W.T.

*Northwest Territorial Airways Ltd.*

Amend a Class 3 licence to serve Yellowknife, Hope Lake, Port Radium/Sawmill Bay, Coppermine, Holman Island, Melville Island, Lady Franklin and Cambridge Bay, N.W.T. by adding the points Gjoa Haven, Spence Bay and Pelly Bay, N.W.T. and deleting the following conditions: a) in serving Holman Island, the licensee had been restricted to the carriage of traffic between Holman Island and Melville Island on unit toll flights between Yellowknife and Melville Island; b) in its service from Yellowknife to Coppermine, the licensee had been restricted to flights that proceed beyond Coppermine to Lady Franklin and/or Cambridge Bay and return directly to Yellowknife; and c) in its service from Yellowknife to Cambridge Bay, the licensee had been restricted to flights that proceed beyond Cambridge Bay to Lady Franklin and/or Coppermine and return directly to Yellowknife.

Amend a Class 2 licence to serve Yellowknife, Cambridge Bay and Coppermine, N.W.T. restricted to the use of four aircraft in Group D and four aircraft in Group F, by adding the point Holman Island, N.W.T. and deleting the following conditions: a) in its service from Yellowknife to Coppermine, the licensee had been restricted to flights that proceed beyond Coppermine to Cambridge Bay and return directly to Yellowknife; and b) in its service from Yellowknife to Cambridge Bay, the licensee had been restricted to flights that proceed beyond Cambridge Bay to Coppermine and return directly to Yellowknife.

*Northward Airlines Ltd. and Kenn Borek Air Ltd.*

Disallow a proposal by Northward Airlines Ltd. (by its Trustee in Bankruptcy, Touche Ross Limited) and by Kenn Borek Air Ltd. to transfer certain commercial services or portions thereof from the former to the latter.

Cancel a Class 4, Group C service from a base at Cambridge Bay, N.W.T., a Class 4, Group C service from a base at Yellowknife, N.W.T.; a Class 3, Groups B, C and E service between Dawson, Old Crow, Clinton Creek, Mayo and Whitehorse, Y.T., Inuvik, Paulatuk, Sachs Harbour, Tuktoyaktuk and Fort McPherson, N.W.T.; a Class 2, Groups B and C service between Norman Wells, Fort Norman, Fort Franklin, Fort Good Hope, Fort McPherson, Aklavik, Inuvik and Tuktoyaktuk, N.W.T.; a Class 3, Groups C and E (restricted to Fairchild F-27 type aircraft in Group E) service between Cambridge Bay, Gjoa Haven, Spence Bay, Pelly Bay, Repulse Bay, Sachs Harbour, Holman Island, Coppermine, Yellowknife, Norman Wells, Fort Norman, Fort Franklin, Wrigley and Fort Simpson, N.W.T., Watson Lake and Whitehorse, Y.T.

Authority granted to *Kenn Borek Air Ltd.* to operate a Class 3, Groups C and D service between Inuvik, Aklavik, Tuktoyaktuk, Fort McPherson, Paulatuk and Sachs Harbour.

*Northward Airlines Ltd. and Trans North Turbo Air Ltd.*

Disallow a proposal by Northward Airlines Ltd. (by its Trustee in Bankruptcy, Touche Ross Limited) and by Trans North Turbo Air Ltd. to transfer certain services or portions thereof from the former to the latter.

Cancel a Class 4, Group E (limited to Fairchild F-27 type aircraft) service from a base at Whitehorse, Y.T.; a Class 9-4, Group E international charter service from a base at Whitehorse, Y.T.; a Class 2, Groups C and E (limited to Fairchild F-27 type aircraft in Group E) service between Whitehorse, Mayo, Dawson, Y.T., and Inuvik, N.W.T.; a Class 3, Groups B, C and E service between Dawson, Clinton Creek, Old Crow, Mayo and Whitehorse, Y.T., Inuvik, Paulatuk, Sachs Harbour, Tuktoyaktuk and Fort McPherson, N.W.T.

Authority granted to *Trans North Turbo Air Ltd.* to operate a Class 2, Groups B, C and D service between Whitehorse, Mayo, Dawson and Old Crow, Y.T., and Inuvik, N.W.T. with a three-year prohibition applicable to Class 4 licensees to carry traffic between any points on this route.

*Beaufort Flying Service Limited*

Dismiss application by Beaufort Flying Service Limited for deletion of a condition of its licence.

*Simpson Air (1981) Limited*

Authority granted to Marshall Stanley, Paul Jones, Margaret Ann Belair, Noreen Ada Grant and Edward James Grant, proposing to incorporate a company to be known as Simpson Air (1981) Limited, to operate a Class 4, Groups A and B charter service from a base at Cambridge Bay, N.W.T.

*Air North Charter and Training Ltd.*

Waive in part a prohibition attached to a Class 4 licence to permit Groups A and B service between Whitehorse, Mayo and Dawson, Y.T. and Inuvik, N.W.T., this waiver being granted for a period of three years.

*Alkan Air Ltd.*

Waive in part a prohibition attached to a Class 4 licence to permit Groups A and B service between Whitehorse, Mayo and Dawson, Y.T., and Inuvik, N.W.T., this waiver being granted for a period of three years.

**Others**

*Beaufort Flying Service Limited*

Transfer of shares of Beaufort Flying Service Limited authorized to operate a Class 4, Group A service from a base at Tuktoyaktuk, N.W.T. from Cecil E. Rilling to Herschel Island Transport Ltd.; suspend Classes 4 and 9-4 licences to operate charter services from a base at Tuktoyaktuk, N.W.T., said licences to be cancelled if the licensee fails to reinstitute the services by Aug. 31, 1982.

*Bradley Air Services Limited (First Air)*

Amend a Class 3, Groups C and D licence to serve Frobisher Bay, Broughton Island, Pangnirtung, Cape Dyer, Cape Dorset, Coral Harbour, Clyde River (Cape Christian), Igloodik, Hall Beach, Pelly Bay, Repulse Bay, Arctic Bay/Nanisivik and Pond Inlet, N.W.T. by deleting a prohibition from carrying local traffic between Pelly Bay and Repulse Bay and by cancelling the point Cape Dyer, N.W.T.; amend a Class 4, Groups A, B, C, D and E charter service from a base at Resolute Bay, N.W.T. by suspending the Group A authority.

**Buffalo Airways Ltd.**

Authority to operate a Class 3, Group D service between Hay River, Pine Point and Fort Smith, N.W.T. with the prohibition from providing non-stop service between Hay River and Fort Smith; authority to add a Class 7, Group A service to its license; amend a Class 4, Groups A-RW and a Class 7, Group A-RW licences by authorizing Class 4 and 7 services in Groups A-RW, B-RW and C-RW.

**Calm Air International Ltd. (Calm Air)**

Amend a Class 3, Group E service between Churchill, Manitoba, Baker Lake, Rankin Inlet, Coral Harbour, Hall Beach and Yellowknife, N.W.T. by cancelling the point Hall Beach.

**Fort Smith Air Service Ltd.**

Transfer of shares of Fort Smith Air Service Ltd. from Frank G. Tupper to Charles LeRoy Schaefer; lift suspension of a Group C authority under a Class 4 and 7, Groups A, B and C licence to operate from a base at Fort Smith, N.W.T.

**Inuvik Coastal Airways Ltd.**

Transfer of shares of Inuvik Coastal Airways Ltd. from Tuk Traders Ltd. to Mervin McKerral; the licensee operates a Class 4, Group C charter service from a base at Inuvik, N.W.T.

**Kenn Borek Air Ltd.**

Cancel a Class 4, Group D service from a base at Frobisher Bay, N.W.T.; amend a Class 4 and 7, Groups A, B, C and D service from a base at Resolute Bay, N.W.T. by cancelling the Group A authority; amend a Class 9-4, Groups A, B, C and D international charter licence by cancelling the Group A authority.

**Klondyke Air Charter Services Ltd.**

Suspend a Class 4, Groups A and B charter service from a base at Dawson, Y.T.

**Koenen's Air Service Limited**

Amend a Class 4, Groups A, B and C service from a base at Yellowknife, N.W.T. by suspending the Group B authority.

**L & A Aviation Ltd. (Landa Aviation)**

Amend a Class 4, Groups A and B licence authorizing a service from a base at Hay River, N.W.T. by changing the name of the licensee to L & A Aviation Ltd. carrying on business under the firm name and style of Landa Aviation.

**Lambair Limited**

Suspend a group of licences under Classes 3, 4 and 9-4.

**Ontario Central Airlines Ltd.** is granted a waiver from the Class 4 Positioning Charges Regulations with respect to charter operations from the points Thompson and Churchill, Manitoba using DC-3 aircraft.

**Normair Limited**

Cancel a Class 4, Group A charter service from a base at Pine Point, N.W.T.

**Northward Airlines Limited**

Transfer of a service between Norman Wells, Fort Norman and Fort Franklin, N.W.T. from Northward Airlines Limited to Nahanni Air Services Ltd. but on a Class 3 basis.

**Northwest Territorial Airways Ltd.**

Amend an experimental Class 2, Group F licence to serve Yellowknife, Rankin Inlet and Frobisher Bay, N.W.T. by granting permanent authority; amend a Class 3, Groups D and F service between Yellowknife, Hope Lake (suspended), Port Radium/Sawmill Bay (suspended), Coppermine, Holman Island, Melville Island, Lady Franklin, Cambridge Bay, Gjoa Haven, Spence Bay and Pelly Bay, N.W.T. by cancelling the authority to serve the point Melville Island.

**Pacific Western Airlines Limited**

Amend a Class 2, Group F licence to serve Winnipeg, Manitoba, Yellowknife, N.W.T. and Whitehorse, Y.T. by cancelling the authority to serve Winnipeg; subsequently cancel the entire service.

**Page Flight Services Ltd.**

Transfer of shares of Page Flight Services Ltd. from Michael Eugene Regan to Norwell Developments Ltd.; the licensee is authorized to operate Class 4 and 7 services from a base at Norman Wells, N.W.T.

**Ptarmigan Airways Ltd.**

Waiver of a condition attached to a Class 3 licence authorizing service between Yellowknife, Snowdrift, Lac la Martre, Rae Lakes, Fort Resolution, Pine Point and Hay River, N.W.T. to permit a direct Friday night and Sunday service between Yellowknife and Hay River, for a period of one year.

**Simpson Air Ltd.**

Amend a Class 3, Groups A, B and C licence to serve Fort Simpson, Fort Liard, Nahanni Butte and Wrigley, N.W.T., Fort Nelson, Dawson Creek and Fort St. John, B.C. by changing the name of the licensee to Simpson Air Ltd. operating under the firm name and style of The Northern Commuter; transfer of a Class 4, Group A service operated from a base at Fort Liard, N.W.T. to Urs and Marianne Schildknecht proposing to incorporate a company to be known as Liard Air Limited; transfer of a Class 4, 7 and 9-4, Groups A, B and C service operated from a base at Fort Simpson, N.W.T. to Simpson Air (1981) Limited.

**Spur Aviation Ltd.**

Authority to add recreational flying services to a Class 7 flying training licence.

**Terr-Air (Territorial Airways) Ltd.**

Transfer of shares of Terr-Air (Territorial Airways) Ltd. from John William Rolls and Margaret Rolls to Explorair Helicopters Ltd.; the licensee is authorized to operate a Class 4, Group A-RW service from a base at Ross River, Y.T.

#### *Totem Air Limited*

Transfer of shares of Totem Air Limited to I.M.S. Ltd., John Richard (Bud) McBride and Robert S. McBride to Robert H. Martin, George S. Czirjak, Robert Simmons and Robert G. Martin proposing to incorporate a company to be known as Chad-Commercial Helicopters Inc.

#### *Trans North Turbo Air Ltd.*

Temporary authority to charge unit tolls between Whitehorse and Yellowknife under a Class 4, Groups A, B, C and D licence; amend a group of licences by changing the name to Trans North Turbo Air Limited operating under the firm name and style of Trans North Air.

#### *Wardair Canada (1975) Ltd.*

Cancel Class 4, 7 and 9-4 licences to operate services from a base at Yellowknife, N.W.T.

#### *Whitehorse Flying School Limited*

Amend a Class 4, Group A and Class 7, Groups A and B licences to operate a service at Whitehorse, Y.T. by suspending the Group B authority.

### **Water Transport Committee**

#### **Responsibilities**

##### *a) Under the Transport Act*

The WTC administers the Transport Act which governs the transport of goods and passengers by ship from one port or place in Canada to another in respect of any sea or inland water for which the Act has been proclaimed to be in force by the Governor in Council.

#### **Review 1981-82**

For the 1981 season, the Commission considered seven applications for water transport licences for the Mackenzie River watershed and the Canadian western Arctic. It approved 5 licences in favour of 231 vessels with a total of 195 000 gross tons. Two applications were withdrawn.

### **Licences approved**

#### *Mackenzie River Watershed*

Cooper Barging Services Ltd.  
Northern Transportation Company Limited  
Arctic Transportation Ltd.  
Norsask Marine Ltd.  
Len Cardinal Transport Ltd.

#### *Canadian Western Arctic*

Northern Transportation Company Limited  
Arctic Transportation Ltd.

#### *b) Coasting Trade*

The WTC is responsible under the Coasting Trade Exemption Regulations made pursuant to Part XV of the Canada Shipping Act for advising Revenue Canada whether there are suitable Canadian ships available to carry out work that a ship under a foreign flag has applied to perform in Canadian waters. In 1981, the Commission received applications to allow two foreign flag dredges, GEOPOTES IX and AQUARIUS, to work within Canada's 12 mile limit in the Beaufort Sea. On each occasion, the Commission advised Revenue Canada that there were no suitable Canadian ships available, and temporary entry was permitted.

# Department of Communications

## **Responsibilities**

The Department of Communications, in fostering the development and operation of telecommunications for Canada, acknowledges the particular needs of northern Canadians when developing national communications policies and programs. The Department promotes the development of efficient northern communication facilities and helps northern Canadians adjust to rapidly changing conditions.

The Department of Communications continues to be responsible for handling all aspects of authorization, licensing, frequency assignment and spectrum management under the Radio Act. In the North, this service is provided by the District Offices in Yellowknife, Fort Smith and Whitehorse. The Fort Smith Office also operates a monitoring station.

## **Review 1981-82**

Throughout 1981-82, the Department was involved in experimental and operation work in the North and participated in a number of joint ventures with other government departments and private groups.

The Department plays a major coordinating role in northern communications planning. Much of the Department's interdepartmental involvement is administered through its committees in the two territorial capitals, Whitehorse and Yellowknife. The DOC district manager for Yukon sits on the Federal Interdepartmental Co-ordinating Committee (FICC) in Whitehorse and Chairs the Communications Sub-committee of the FICC. The DOC district manager for Yukon sits on the Federal Interdepartmental Co-ordinating Committee (FICC) in Whitehorse and chairs the Communications Sub-committee of the FICC. The DOC Central Region Director, who holds responsibility for the N.W.T. and the Prairie Provinces, is a member of the N.W.T. Coordinating Committee in Yellowknife and chairs that Committee's Standing Group on Communications.

In 1981-82, the Central Region continued its participation in the Summer Job Corps, a shared program with the Department of Employment and Immigration. The program operates in Northern Manitoba and Saskatchewan as well as the N.W.T. and has been useful in providing basic training in communications and in introducing young people to careers in communications. With the program completely decentralized to the District Office level within the N.W.T., DOC has created a number of training positions in communications. Native students have filled many of these, which has helped the Department to meet its objectives of broadening the use of community people trained in communications. The long-term potential of this program lies both in developing new staff trained in communications and in reducing unemployment.

The Central Region recently hired four new radio inspectors. The hiring resulted from a pilot project in Fort Smith, N.W.T., geared to provide employment opportunities in the North for northerners. The new inspectors graduated from both the Fort Smith Adult Vocational Training Centre's (AVTC) one year electronics program, program, and an enrichment course provided by the Department of Communications at its monitoring station at Fort Smith.



This experimental low-cost earth terminal is one of several located throughout the North.

The enrichment program included courses in electronic communications and mathematics, as well as written and oral communication. It consisted of theoretical as well as practical sessions, and was developed by inspectors at Fort Smith and the regional training officer. The program ran daily for nine weeks.

As part of the equal opportunities program, the Central Region staffed the recently created permanent position of Manager, Native Projects. This new position helps respond to native communications concerns throughout both the N.W.T. and the Prairie Provinces.

Over the past three years, the Department, has been involved in several experiments using the Anik-B satellite. These experiments have had significant implications for the future of native programming and the extension of basic television services in the far north. The Anik-B satellite, the world's first dual-band satellite, operates in both the conventional 6/4 GHz band and in the new 14/12 GHz frequency band. DOC has leased this high-frequency portion for its pilot projects. These projects in the North, initiated during 1980-81, were extended into 1981-82.

"Inukshuk", the name of the project formulated by Inuit Tapirisat of Canada (ITC), with assistance from the federal Departments of Communications and DIAND, started in September 1980 and continued until May 1981. "Inukshuk" involved two-way communications and teleconference links to meet the needs of Inuit communities in the Territories.

Satellite earth stations were located in Eskimo Point, Pond Inlet, Cambridge Bay, Igloolik, and Baker Lake with the video transmit terminal located at Frobisher. Inuit Tapirisat established a production centre at Baker Lake and a studio in Frobisher. The ITC worked with the Pond Inlet Community Television Society (PIC-TV) to produce programming for the experiment and to purchase programming from Cambridge Bay and Eskimo Point.

The federal commitment to "Inukshuk" included \$1.9 million through the Department of Indian Affairs and Northern Development to cover the costs of training, salaries, leasing and capital expenditures, travel, and general administration. The DOC contribution to ITC and TNI (discussed below) was in the order of \$2 million each for satellite time and earth stations. The Department's Communications Research Centre and the Central Region also provided professional and technical expertise and assistance throughout the project's period of operation. The satellite-supported television operations were used to link a number of communities permitting tele-conferences, educational instruction, and general Inuit-language broadcasting.

Taqramiut Nipingat Inc. (TNI) developed a similar experimental project to improve communications in northern Québec communities. The project, "Naalakvik II", which lasted from October 1980 until April 1981, involved five communities: Sugluk, George River, Inukjuak, Great Whale River and Fort Chimo. Video broadcast transmitters, linked by satellite, were installed in these five communities to enable them to receive programming from TNI's own production centre in Sugluk.



Inuit in remote Arctic communities produce and distribute TV programming via satellite in their own languages to meet their own needs.

A significant outcome of these two pilot projects has been the formation of the Inuit Broadcasting Corporation. In April 1981, the CRTC granted the Corporation a network licence, and the Department of Indian and Northern Affairs provided it with \$3.9 million over two years. The Corporation intends to use late night hours on the CBC satellite channel and to originate Inuit programming from one or two northern sites. In the meantime, Telesat facilities at Allan Park are being used to transmit tapes of northern native programming produced by the Inuit personnel who were trained through the ANIK-B projects.

The third major Anik-B satellite experimental program that relates directly to the North involves determining the feasibility of delivering two channels of television programming via one satellite transponder and utilizing small 1.8 metre satellite ground stations. Because of the higher powered Anik-B satellite facilities, the system uses a new generation of low-cost receivers. Therefore this method of delivery is suitable for rural and remote areas. The Department has installed satellite "Television Receive Only" (TVRO) earth stations, in the Yukon at Whitehorse, Johnsons Crossing, Eagle Plains, Watson Lake, Cross River and Stewart Crossing; and in the N.W.T. at Yellowknife, Fort Providence, Inuvik, Fort Simpson, Echo Bay, Norman Wells, Fort Smith and Taltson River. These stations are being lent by DOC. Since September of 1980, it should be noted, three TV signals have been carried by one transponder to meet program commitments to other pilot projects.

On April 14, 1981, the Canadian Radio-television and Telecommunications Commission (CRTC) licensed new services to extend radio and television programming by satellite to under-served and northern areas of Canada. Among the applications approved were a proposal from the Inuit Tapirisat of Canada for the distribution of Inuit programming and one from the Council for Yukon Indians and the Dene Nation for the distribution of Native-produced radio programming. As noted earlier, the CRTC also granted a network licence to the Inuit Broadcasting Corporation, which has begun to broadcast some Inuit programming.

The Council for Yukon Indians has begun some local Native radio broadcasting, and the Dene Nation is working toward this goal.

The CRTC also issued a network licence to Canadian Satellite Communications Inc. (CANCOM) to distribute several television and radio services to under-served and northern parts of Canada. Telesat Canada television uplinks were made available at four locations across Canada and the new CANCOM service began commercial operation in January 1981. CANCOM provides under-served Canadians in rural and northern parts of the country with a varied choice of programming from all regions of Canada in both official languages and Native languages. By the end of March 1981, the CRTC had issued licences for the distribution of the CANCOM service in several communities throughout the territories: Dawson City, Watson Lake, Faro, Whitehorse, Wolf Creek and Carcross Corners, Takhini and McPherson, Yellowknife, Fort Simpson, Cambridge Bay, Akklavik, Hay River, Fort Smith, and Pine Point.

In May of 1981, the Department of Communications announced a program of information and technical advice to help under-served communities wishing to receive the CANCOM service. Department of Communications staff in regional and district offices across Canada and in the North are providing information on licensing, general technical advice and guidelines in completing the required application forms. The Department of Communications also made changes to its earth station policy to facilitate the reception of signals from Canadian satellites especially in northern and other under-served parts of Canada. As a result, the "resource camps" carrying out logging, mining or petroleum exploration activities, became eligible to own and operate earth stations for receiving radio and television programming from Canadian satellites. These camps also became exempted from the requirement under the Radio Act to obtain a licence from the Department of Communications in cases where the CRTC does not require a broadcasting licence.

The CRTC also issued several broadcasting licences for communities in the N.W.T. to provide more access to CBC radio and television programming. On July 22, 1981, after a public hearing, the CRTC announced that it had approved broadcasting licences for Native and English language television stations at Coral Harbour, Arctic Bay, Chesterfield Inlet, Fort Liard and Pelly Bay. With a transmitter power of 10 watts, these stations will be able to broadcast the programs of the CBC English language television network received via satellite, and produce part-time local programming from studios within the communities. At the same time, the CRTC also announced the licensing of English language FM radio stations for each of these communities. Stations at Clyde River and Grise Fjord were also licensed to rebroadcast the programming of the CBC English language AM network.

In December of 1981, the CRTC licensed English language television stations for four communities: Hall Beach, Sanikiluaq, Snowdrift, and Holman Island. They were licensed to broadcast the programs of the CBC television network received from satellite, and to broadcast television programs part-time their own studies. The CRTC also granted these communities licence to operate FM radio stations, and licensed an AM station at Gjoa Haven to rebroadcast the CBC AM network programming.

During the past year, the Department of Communications has worked closely with the CBC Northern Service. Both support more native television training and production.

The Northern Service strives to provide a broadcasting service to meet the special needs of all northerners. Its activities are described in full in the CBC section of this report.

The telephone service of Bell Canada and NorthwTel continued to improve throughout the North with Telesat installing two "Thin Route" message stations — small earth stations used for carrying telephone traffic — in Cullaton Lake and Arctic Bay. Long distance service was generally upgraded by adding more circuits to the Thin Route service to twenty-five northern communities. During 1981-82, Bell Canada also installed additional long distance circuits at Baker Lake, Broughton Island, Clyde River, Chesterfield Inlet, Coral Harbour, Eskimo Point, Leaf Bay, Pangnirtung, Rankin Inlet, Repulse Bay, Whale Cove, Frobisher, Hall Beach, Resolute, and Nanisivik.

Bell Canada continues its policy of providing Inuit subscribers with facsimiles of their monthly bills in Inuktitut; this practice has now been operating successfully since early 1978. Bell also continues to distribute a trilingual telephone directory (Inuktitut, English, French), complete with maps and illustrations. Where possible, the book uses the special dialect of the communities involved.

Arctic Bay, Lake Harbour, Leaf Bay, Little Cornwallis Island and Repulse Bay received the new DMS-10 S.D.O. — "Small Dial Office" machine — as part of a ten-year effort to replace older, less reliable switching equipment. The "Small Dial Office" machine is a new type of digital switching apparatus designed by Bell Northern Research and manufactured by Northern Telecom.

The S.D.O. has a maximum capacity of 500 lines instead of 6,000 and is therefore less costly and better suited to the special conditions encountered in the far North. The machine will provide a more reliable service and, in addition, will enable maintenance employees to monitor its operation by satellite.

NorthwesTel continues to provide a full range of telecommunications services throughout the Yukon and the western part of the N.W.T. Expansion and extension of NorthwesTel operations and service was undertaken in several areas throughout the North. Specific information on these recent initiatives is outlined under the heading "NorthwesTel Inc./NorouesTel Inc.", included in this report under the CNR section.

In 1981-82, federal government support for improved telecommunications services in the N.W.T. amounted to \$595,000 provided under the Northern Communications Assistance Program (NCAP) and under the Minimum Annual Revenue Guarantee Agreement.

The \$9 million Northern Communications Assistance Program, as originally announced in January 1977, was reduced to \$7.2 million in federal contributions. These contributions cover the capital cost of communications facilities required to bring reliable long distance telephone service to the Northwest Territories. Bell Canada and NorthwesTel, the two telecommunication common carriers in the Territories, are investing a similar amount for local exchange equipment. Satellite ground stations or ground-based circuits are providing the long distance links. The Northern Communications Assistance Program does not affect the Yukon because all Yukon communities already have good quality basic telephone facilities.

During the 1981-82 fiscal year, DOC established the Public Initiatives Program to support non-profit groups wishing to make use of Telidon, the two-way television technology. The object of this Program is to contribute to the creation of data bases appropriate to the needs of special interest groups such as Inuit and Native organizations. Among the organizations to which grants have been allocated are the Council for Yukon Indians and the Inuit Tapirisat. The Council for Yukon Indians plans to install a Telidon system, thus creating an English and Native languages data base designed to improve communications among the Native residents of the Yukon. The Inuit Tapirisat project will involve a feasibility study on the potential for Telidon technology among the Inuit in northern Canada through the establishment of a teletext electronic community newspaper.

#### **Plans for 1982-83**

The Department of Communications will remain committed during the 1982-83 year to doing everything within its mandate to promote communication services throughout the North. It will also continue to encourage more northern and native programming.

It is expected that in 1982-83, CRTC will continue to authorize northern communities to distribute the new Canadian satellite-delivered CANCOM television and radio service. The recently announced Canadian pay television services, expected to become operational in the coming months, will be available by satellite to broadcasting facilities for distribution throughout the North.

The shared Summer Job Corps program of the DOC Central Region and Employment and Immigration will be continued again in 1982. Support will also be available to the Adult Vocational Training Centre at Fort Smith N.W.T. for increased training in electronics. The training will enable graduates to meet the Public Service Commission requirements for employment within the Public Service. Graduates will, therefore, be qualified to fill existing or new positions as they become available.

Telesat plans to install an earth station at Eureka so that permanent "Thin Route" message service will become available during the 1982-83 fiscal year. It also expects the television uplink service for the Inuit Broadcasting Corporation will become operational from Frobisher Bay.

The Public Initiatives Programme's projects in the North, involving the Council for Yukon Indians and the Inuit Tapirisat are expected to become operational. The Program will help these groups to explore the potential for special interest applications of Telidon in the North.

It is expected that during the next two to three fiscal years, the Department will fund additional work under the Northern Communications Assistance Program (NCAP) to provide long distance and local telephone service to more communities in the NorthwesTel service area.

Bell Canada will continue to expand its satellite circuit program at the following existing N.W.T. earth station locations: Cape Dorset, Clyde River, Eskimo Point, Little Cornwallis Island Pangnirtung and Rankin Inlet. The new DMS-10 SDO is scheduled to be installed at Grise Fjord, Whale Cove, and Chesterfield Inlet during 1982-83 to replace the old step-by-step switching machines. NorthwesTel plans to continue and improve its facilities during 1982-83.

#### **Summary of Direct Northern Expenditures (000's)**

	\$	%
<i>Total Forecast 1981/82</i>	1 419	100.0
<i>Expenditure by Northern Objective:</i>		
Quality of Life	686	48.3
Social and Cultural Development	395	27.8
Economic Growth	333	23.5
Evolution of Government	5	0.4

# Crown Assets Disposal Corporation

## **Responsibilities**

Crown Assets Disposal Corporation is an agency of the federal government. Its mandate is to act as an agent of the Crown in the sale of the surplus assets of federal government departments and agencies. Many of these assets are sold from locations in the North. Under a long-standing agreement, sales of United States Government surplus property located at DEW Line sites and other northern establishments are also carried out. In addition, by agreement, the Corporation acts as the agent of the Government of the Northwest Territories in the sale of surplus assets.

## ***Review of 1981-82***

In 1981-82, the Corporation's sales of surplus assets increased. For environmental reasons, a quantity of United States heavy equipment was taken from DEW Line Sites to Montreal, where it was sold during the Fall of 1981.

In June 1981, the Corporation opened a regional sales office in Winnipeg, Manitoba. The office is responsible for that area of the Arctic located East of 90° West longitude.

## ***Plans for 1982-83***

The Corporation will continue to publicly advertise surplus equipment available in the North and will assist Canadian or U.S. establishments with any special disposal problems they may have.

# Eldorado Nuclear Limited

Eldorado Nuclear Limited is a Federal Crown Corporation. It is engaged in the exploration, mining and refining of uranium for use in generating electricity. In 1981-82, the Corporation participated in two field investigations in the Keewatin district of the Northwest Territories and two in the Yukon Territory.

Eldorado Nuclear expects to continue its exploration activities at about the same level in the 1982-83 fiscal year.

# Department of Employment and Immigration

## **Responsibilities**

The Department works with employers and employees to help meet their respective needs for staff and jobs. It uses many different programs and services, including the Canada Employment Centres professional counselling, recruitment services, training, relocation assistance, non-immigrant workers' control, industrial adjustment assistance and the Unemployment Insurance Program.

Operational responsibilities for the Commission in the Yukon Territory come under the Director, Yukon.

Consultation in policy development on employment and immigration matters occurs between the federal and Territorial Governments. The Manpower Needs Committee in the Yukon, with representation from several departments of the Territorial and Federal Governments, meets frequently each year.

## **Northwest Territories**

### **Review 1981-1982**

Employment and Immigration Canada provides services to the Northwest Territories through Canada Employment Centres (CECs) located in Yellowknife, Inuvik, Hay River and Frobisher Bay. Full-time sub-offices are maintained at Fort Simpson, Fort Smith and Rankin Inlet. An Employment Development Branch located in Yellowknife also administers a variety of programs in the N.W.T.

A full range of services relating to unemployment insurance programs is available from both Frobisher Bay and Yellowknife. From April 1, 1981 to February 28, 1982, a total of 3,384 claims were received from N.W.T. residents.

The Yellowknife Canada Employment Centre with a staff of 32, along with its branch offices, serves about 30 settlements with a population of more than 24,000. This CEC is responsible for providing services to about two-thirds of the N.W.T. Services are largely directed towards the government offices in the capital city and the major mines, including two large gold mines in Yellowknife.

The CEC in Hay River with a staff of five, is responsible for a labour market area of approximately 48,000 km with a population of approximately 6,500. During the past year, the CEC has concentrated on employers' staff needs in four major communities with emphasis on providing service to the transportation and mining industries.

The CEC in Inuvik has a staff of seven. It is responsible for an area of approximately one-sixth of the N.W.T. and serves about 12 settlements with a combined population of approximately 7 300.

The CEC at Frobisher Bay, with a staff of six, is responsible for two-fifths of the area of the N.W.T. It serves approximately 24 settlements with a combined population of more than 8 000. The staff is concerned with employment in the Baffin Region and with the employment needs associated with the development of a new lead-zinc mine at Strathcona Sound.

From April 1 to February 28, 1982, the N.W.T. CECs recorded 4 739 new registrations. In addition, 4 667 registrations were revived. In an effort to find work for these registrants, the CECs referred 9 329 applicants to 4 935 vacancies. More than 3 380 people were placed.

During 1981-82 the Employment Development Branch spent approximately \$2.52 million through a variety of programs to create 555 jobs. Under the Canada Community Development/Services Projects programs, a total of \$663 000 was spent to create 170 jobs. These ranged from logging and community repair work to health care, teaching and training positions.

Approximately \$1.5 million was spent under the Local Employment Assistance Program to provide funding for 27 projects. These created 162 jobs in areas such as logging, sewing, baking and restaurants.

Under the Summer Canada Program, \$326 000 was spent among 38 projects to provide work for 220 people.

Under the New Technology Program, one project was funded at a cost of \$32 000. This resulted in the creation of three jobs in research and analysis.

The Canada Manpower Training Program is administered under an agreement between the Department and the Government of the N.W.T. The latest agreement, signed May 2, 1978, was due to expire on March 31, 1981. However, it was extended pending changes in legislation. The agreement, which encourages the development of training programs within industry, underscores the fact that training programs can be effective when consultation and co-operation exist between the Governments of Canada and the N.W.T.

During the fiscal year, the Department purchased approximately 47 800 training days from the N.W.T. Department of Education. These training days were used to develop the skills of approximately 900 trainees, 400 apprentices and to provide academic upgrading to approximately 100 persons.

In addition, 431 contracts were signed under the Canada Manpower Industrial Training Program, providing instruction for an estimated 800 trainees.

Under the Canada Manpower Mobility Program, 20 workers received assistance in looking for employment outside the areas they lived in. Thirteen of these persons were relocated to employment and two were given special travel assistance.

Total expenditure for this activity was approximately \$12 000. In addition, exploratory assistance for 10 persons and relocation assistance for 16 persons was authorized for people looking for or accepting work in the Northwest Territories. All figures relating to mobility are minimum estimates.

During 1981-82, Outreach Programs operated in Baker Lake, Fort Good Hope, Eskimo Point, Fort Resolution, Igloodik, Wrigley, Pond Inlet, Pangnirtung, Fort Providence, Cambridge Bay, Tuktoyaktuk, Rae-Edzo, and Yellowknife. A total of 13 Outreach workers were located in the N.W.T.

#### **Plans for 1982-83**

Early in 1982, a new sub-office will be opened in Norman Wells. It will work to find employment for as many northerners as possible, with special emphasis on Natives. This new sub-office will also be responsible for maintaining closer liaison with employers in the area in order to better meet their needs. The sub-office will be involved in employment matters relating to two major projects: ESSO Resources Norman Wells project and the pipeline to Zama City in Northern Alberta.

Several boundary changes in the N.W.T. will take place that will affect areas served by the Canada Employment Centres. Frobisher Bay will add three settlements, which will increase the population that its Centre serves by about 200 people. The CEC in Inuvik will have its area decreased, reducing the population served by about 1 000 persons. People in these settlements will be attached to the Yellowknife CEC. All changes to the geographic areas served by the Centres took place effective April 1, 1982. Efforts will continue to maintain good working relationships with the N.W.T. Government and other federal departments to assure a co-ordinated approach to activities. An aggressive marketing plan, implemented in the first months of 1982, will continue throughout 1982-83 to promote Manpower Planning.

#### **Yukon Territory**

##### **Review 1981-82**

The Department focused on maintaining and improving services to all areas of the Yukon. Outreach workers continued to provide employment services to their local labour forces, in addition to those services provided by Whitehorse-based staff.

Through personal visits to employers, and through liaison with employer organizations and communities and publicity programs, employers were encouraged to use the services of the Commission, improve the skills of their employees through training, and develop methods to make maximum use of Yukon labour.

The Canada Employment Centre for Students operated from February to August, 1981. The graduate student manager contacted all post-secondary Yukon students about their summer employment needs and identified suitable employment opportunities. In addition, two undergraduates helped Yukon secondary school students to apply for and find jobs. This was accomplished through visiting potential Yukon employers, and secondary schools, providing short courses on job search techniques and launching a public relations program. During the 1981 program, 1 038 students registered for employment and 572 were placed.

A Native employment counsellor worked with the Natives in the labour force to match their needs with specific programs.

Canada Manpower Training Program activities continued throughout the year in virtually all courses offered by the Yukon Territorial Government through the Yukon Vocational and Technical Training Centre, both in Whitehorse and outlying communities. During 1981-82, approximately 35 000 training days were purchased under the Adult Occupational Training Act Agreement. Training days included basic training for full-time and part-time skill development. In addition, 13 trainees were referred to southern training institutions, primarily in British Columbia.

The Canada Manpower Industrial Training Program provided financial incentives to employers who hired and trained unemployed workers and those with special needs, and who upgraded the skills of those already employed. A total of 143 contracts with employers covering 463 trainees were involved in this program. In addition, two major Critical Trades Skill Training contracts were negotiated with two major mining companies. These contracts involved selecting and hiring 29 additional apprentices in 3 trade areas — Heavy Duty Mechanic, Industrial Electrician and Millwright. These contracts are for a period of two years and it is expected that further contracts for more apprentices will follow each year.

The Canada Manpower Mobility Program helps workers explore the job market and relocate away from their places of residence. The Program helps workers to accept temporary jobs in other areas, to travel to Canada Employment Centres for services not available in their home areas and to travel to training courses. During the year, two temporary employment grants, one exploratory grant and eight relocation grants were authorized in Yukon.

Employment and Insurance operations included 10 340 registrations for employment, 5 110 referrals to employment opportunities and 1 821 placements. In addition, 406 visits were made to employers. Insurance operations processed 3 449 claims for unemployment insurance benefits.

The four community-based Outreach Projects at Watson Lake, Haines Junction, Dawson City and Mayo functioned successfully during the year by extending CEC services into their respective communities.

The Yukon allocation for Summer Canada '82 is \$458 000, with developmental work and review largely completed by March 31, 1982. Summer Canada '82, as in 1981-82, largely replaces all previous internal and external Youth Employment Programs offered by the Government of Canada.

The Local Employment Assistance Program (LEAP), which provides funds to develop long-term jobs and employment opportunities, approved projects totalling \$698 330 during the year. Because these projects are long-term, carry-over into 1981-82 is included and many will require additional funding in future fiscal years.

Three new Employment Development Programs were implemented during the year, two of which replaced Canada Works. Details of their objectives and utilization are as follows:

The Canada Community Development Program is designed to help local organizations in developing and managing activities that will create short-term jobs. These jobs are related to community-based projects. They are intended to help maintain or expand the number of existing jobs in areas of high unemployment. A total of 17 projects were approved which, with a federal financial commitment of \$386 000, created 94 jobs.

The Canada Community Service Program is designed to create jobs in the field of community services, particularly in activities dealing with the serious problems faced by women, native people and immigrants. This long-term employment initiative has the potential to fund projects over a three-year period on a diminishing scale. Nine projects were approved creating 49 jobs with a federal financial commitment of \$249 000.

The New Technology Employment Program is designed to provide jobs for post-secondary graduates in technical and scientific fields who have been unable to find work related to their field of study. Two projects were approved with a federal financial commitment of \$13 949.

The Program for Employment-disadvantaged is directed to those who have not been able to find continuous work for a significant period of time because of physical or mental disabilities or other employment barriers. The Program is intended to help such people find work who would not be able to do so without the assistance of the Program. Nine jobs have been created under this Program with a financial commitment of \$64 000.

Considerable time and effort continued to be directed toward Manpower Planning for the proposed Alaska Highway Gas Pipeline and the Beaufort Sea Hydrocarbon Development. In addition, membership on the management committee and the various sub-committees of the two Sub-agreements to the General Development Agreement required much time. Other planning and development activities relating to existing and proposed economic projects continued.

#### **Plans for 1981-82**

The Department will emphasize improving services to all areas of the Yukon by continuing to co-ordinate and integrate one-stop service; expanding services through existing programs; developing and supporting services through small community-based Outreach projects; making employers aware of the services available to recruit, retain and upgrade their work forces; maintaining CEIC services to native people; co-ordinating implementation of new economic initiatives; and planning for employment and training demands from projects in Yukon.

#### **Summary of Direct Northern Expenditures (000's)**

	\$	%
<i>Total Forecast 1981/82</i>	25 443	100.0
<i>Expenditure by Northern Objective:</i>		
Quality of Life	16 881	66.3
Economic Growth	7 096	27.9
Administration and Support	1 342	5.3
Social and Cultural Development	110	0.4
Sovereignty and Security	14	0.1

# Department of Energy Mines & Resources

## Geological Survey of Canada

### *Responsibilities*

The Geological Survey of Canada gathers and disseminates comprehensive information about the geological framework of the country. Its activities include determining the mineral and energy resources potential within Canada, carrying out studies on the potential use of land, and conserving the natural environment.

Primarily it obtains information about the geological framework of Canada, its properties, and evolution. Information on bedrock geology is obtained through surveys, regional studies and national compilations. This information is used for identifying resources and appraising non-renewable resources potential. Similar studies obtain information about the nature and evolution of the Canadian landscape, its surficial materials, terrain properties, process, hazards and capabilities. This information is essential when evaluating energy and mineral resource development.

The Geological Survey is also concerned with identifying resources and estimating their extent. Estimates of the amount and quality of certain energy resources are made each year. Estimates for mineral commodities, because of the complex calculations involved, are made less frequently.

### *Review 1981-82*

Preliminary results of the 1981 field season were released in Current Research, Part C (November 1981) and Current Research, Part A (January 1982). The former contained 4 items on the north, the latter 32.

Field work in the Yukon and adjacent District of Mackenzie focused on the application of new geological models to areas of possible mineral potential. The Road River "group" (the host rock for several lead-zinc deposits) was traced westward of the Nahanni map-area to the outer part of the Selwyn Basin. In the same area a study was begun on the relation between tungsten-bearing granite plutons and barren plutons. A regional cross section of the central Mackenzie Mountains was developed that suggests crustal shortening of about 90 km. This concept is of interest because it identifies a large untested area with potential for trapped hydrocarbons.

Field work in northern Ellesmere Island in co-operation with Petro-Canada, resulted in clarification of complex late Ordovician and Silurian facies relationships. In central and southern Ellesmere the Devonian to Tertiary structural history of the Arctic Platform rocks was clarified during extensive field work. Field work and subsurface data were used to prepare an account of the geological history of the Sverdrup Basin from Upper Triassic to Lower Jurassic in terms of stratigraphy, paleogeography and hydrocarbon occurrences.

The plate tectonic model of the Bear-Slave Province (Precambrian in territory of Mackenzie) was refined with a better understanding of the initial rifting and early stages of the first collision along the old continental margin. A detailed study was made of the Back River Calderon subsidence complex to investigate the roots of Archean volcanoes. Work along the Thelon Front, the eastern boundary of the Slave Province with the Churchill Province, showed that this boundary is offset by the major transcurrent Bathurst Fault System. In the central district of Keewatin, north of Baker Lake, geological mapping delineated northeast trending supracrustal belts (possibly Archean) and high-grade gneiss complexes. A new tectonic interpretation of the 1200 million year old rocks in Borden Basin in northern Baffin Island indicates that these rocks were deposited in a Proto-Arctic Ocean during rifting of the Canadian-Greenland shield.

Surficial geology field work was directed toward developing a terrain inventory and on understanding of Quaternary processes in order to address environmental and engineering concerns. New field work in Yukon resulted in observation of variations in till composition and provenance that will assist in drift prospecting studies. In the Prince Albert Sound area of Victoria Island, massive ground ice bodies were delineated that would profoundly affect pipeline or other engineering construction. Field and laboratory work has indicated a correlation between tree rings and flood events in the Mackenzie Valley that may assist in forecasting future occurrences. Experimental field research on the occurrence and growth of permafrost was continued at the artificially drained lake (Illisarvik) near Tuktoyaktuk. Field work in central Keewatin has provided data to recognize areas that are susceptible to severe terrain damage by tracked vehicles. These data will result in minimizing or eliminating such damage.

Preliminary analysis of the geophysical data from the FRAM III field operation in the Arctic Ocean, suggests that the Yermak Plateau is in part continental crust and in part oceanic crust. Seismic reflection profiles revealed four ridge structures in Baffin Bay, offshore from Cumberland Sound. The PISCES IV research submersible was used in an examination of the probable source of the Scott Inlet oil seep on the Baffin Island Shelf. Future development in the Arctic will require a more complete inventory of the coastal zones, and a better understanding of coastal processes, in consideration of transportation routes and engineering works. Mapping of the coasts of NE Baffin Island and Bylot Island was completed and further study of the coastal processes undertaken. An atlas of oblique low-level aerial photos of northwest Devon and northeast and northeast Baffin Islands and coastal geology maps for northwest Bathurst Island was prepared under contract. Further information on the distribution of shallow permafrost, sediment dynamics, ice scour, and seabed stability in Beaufort Sea was obtained during joint studies with A.P.O.A., and by reinterpretation of a large volume of existing seismic data.

In the past year, regional mineral resource appraisals were completed of proposed national park areas in northern Yukon and Ellesmere Island for Parks Canada, and a comprehensive appraisal of the mineral and non-renewable energy resources of the entire Yukon was completed for the Department of Indian and Northern Affairs.

Aeromagnetic surveys over Kane Basin and northern Baffin Bay were flown using the National Aeronautics Establishment Convair and the results have been compiled. The first Magnetic Anomaly Map of Arctic Canada was completed and published.

#### **Plans for 1982-83**

Of the 434 projects to be carried out by the Geological Survey of Canada in 1982-83, 133 will involve work in areas north of 60°, and 56 of these will have a field component. Projects without a field component will involve laboratory investigations, evaluation of field data and the preparation of maps and reports.

Field work in the northern Cordillera in Yukon and District of Mackenzie will include: stratigraphic and structural studies in the Nahanni, Sheldon Lake, and Tay River map-areas and detailed mapping of some of the granitic plutons; mapping in the north half of the Dawson map-area with emphasis on the Proterozoic stratigraphy; Proterozoic to Cretaceous stratigraphic investigations in the Mackenzie Mountains; and biostratigraphic and paleontologic studies complementary to the other field projects.

The principal activity of the Precambrian Geology Division in the Northwest Territories will be 1:250 000 geological mapping and associated research in Mackenzie and Keewatin. Three field parties in the area between Great Slave and Great Bear Lakes will provide additional information on the early geological history and the relation of the Wopmay Orogen to plate tectonism. Northwest of Baker Lake mapping will begin in the Aberdeen Lake and Deep Rose Lake map-areas.

The larger field projects in the Arctic Islands will involve reconnaissance mapping of the Paleozoic rocks of northernmost Ellesmere Island and Mesozoic surface and subsurface studies in the Sverdrup Basin.

Terrain mapping and inventory work will begin on Prince of Wales and King William Islands and continue in western Victoria Island and the Nahanni and Sheldon Lake areas of Yukon. Field work in eastern Ellesmere Island will involve paleontological and stratigraphic studies directed toward the glacial history of the eastern Arctic Islands. The surficial geology of the Mackenzie Valley corridor will be examined in the vicinity of Norman Wells and Canot Lake. The study of processes affecting the surficial deposits of the Arctic will include flood hazards along the Mackenzie Highway, permafrost development beneath a drained lake (Illisarvik) in the Mackenzie delta, and slope processes and frost heave on the Parry Islands.

A cruise to the Baffin Shelf will investigate the bedrock geology and sample it by drilling in selected critical areas. An examination will begin of geological conditions of Arctic fiords on Baffin Island that is part of a larger project to establish base line information on these critical environments before proposed Arctic development is started. The reconnaissance of Arctic coasts and coastal processes will proceed with topical studies being continued when possible. Surveys in the Beaufort Sea will assist in the determination of permafrost delineation, soil properties zonation and the origin of pingos in relation to offshore hydrocarbon exploration and development.

The evaluation of Canada's hydrocarbon energy resources is an ongoing procedure and this year will result in reassessment and redefinition for Mesozoic plays in Sverdrup Basin and offshore Beaufort Sea area, and new assessments of the oil and gas resources of the Arctic Islands and the Beaufort-Mackenzie region.

Regional metallogenetic studies, that both provide basic models needed for mineral evaluation studies and assist in planning exploration strategies will be continued in northern Cordillera and southwestern and northwestern Precambrian Shield.

Ocean aeromagnetic studies to be completed in Kane Basin and Nares Strait should provide valuable data needed to develop a model of the early geology history of the area, in particular the relative movement of Greenland and Ellesmere Island. Resource geochemistry studies in the Nahanni map area will be completed, and a radon-helium survey test will be carried out near Baker Lake.

Preparations for the next multidisciplinary study in the Arctic, (CESAR) will include development of new instruments and modification of existing instruments required for geological and geophysical surveys.

#### **Gravity & Geodynamics Division**

##### **Responsibilities**

The Gravity and Geodynamics Division is responsible for completing the regional gravity survey of the Canadian landmass and offshore regions. In the far North, the Division carries out this work in co-operation with the EMR Polar Continental Shelf Project. Precise observations of gravitational forces provide basic data for the mineral and exploration industries and for studies of sedimentary basins and the earth's crust and upper mantle. These observations also provide data for geodetic studies and meet the needs of the Department of National Defence for this kind of data.

The Division is also responsible for establishing gravity standards throughout Canada by maintaining a first-order network of gravity stations. These serve as reference and control points for all regional and detailed gravity surveys. The Division also maintains a bank of all gravity data that meet national standards.

#### **Review of 1981-82**

In conjunction with the Canadian Hydrographic Service, the Division completed a gravity survey of the southerly approach to Prince of Wales Strait.

In the first year of a two-year contract survey, about 280 gravity observations were made in the East Arm of Great Slave Lake, at an average station-spacing of 4-6 kilometres.

Under contract, the Division made about 665 gravity observations at 3 km intervals along two traverses at precise level benchmarks in the Yukon and British Columbia. This activity supported a program of the Geodetic Survey, Surveys and Mapping Branch. The first traverse began at Whitehorse, Yukon and proceeded north to Dawson City; the second began at Carmacks, Yukon, and proceeded east and south via Ross River, Watson Lake and Dease Lake, to Hazelton, British Columbia.

Analysis of multi-parameter geophysical and marine geological data collected during the EMR-sponsored Lomonosov Ridge Experiment (LOREX) in 1979 confirms the widely held belief that this Arctic submarine ridge was formerly part of Eurasia. It appears that initial separation was achieved by left-lateral shearing. What is now the Alpha submarine ridge, may have been part of the original Lomonosov block.

A report on the fragmentation of the Canadian Arctic Archipelago — Greenland region during the last 60 000 years is now being printed.

#### **Plans for 1982-83**

A regional gravity survey of the polar shelf north of Ellesmere Island is scheduled for March 1983, in co-operation with the Canadian Hydrographic Service.

A proposal to study the crustal nature of the Alpha Ridge has been prepared and is now under review. If approved, this EMR-sponsored sequel to LOREX will begin during the spring of 1983.

The second and final phase of the gravity survey of the East Arm of Great Slave Lake will be completed by contract.

The Division will be making some detailed gravity traverses across selected geological structures of the Wopmay Orogen in the District of Mackenzie, N.W.T.

Interpretation studies planned for 1982-83 include: compiling available geophysical and geological information along an Arctic margin transect from the Arctic craton to the Canada Basin of the Arctic Ocean. (This project forms part of a U.S. Geodynamics Committee Joint Canada-U.S. Continent-Oceans Transects Program.) The Division will also study polar margin evolution, sedimentary loading along an axial profile of the Sverdrup Basin and the magnetic anomaly associated with the Haughton structure, Devon Island. It will also review polar evolution and tectonics.

#### **Canada Oil and Gas Lands Administration (COGLA)**

The Canada Oil and Gas Lands Administration exercises broad statutory authority and regulatory control over the exploration and development of mineral resources in Hudson Bay and Hudson Strait and all other Canada Lands.

The disposition of oil and gas rights in Canada is governed by the Canada Oil and Gas Act and its regulations, and the Canada Oil and Gas Land Regulations, promulgated under the Public Lands Grants Acts and the Territorial Lands Act. The Canada Oil and Gas Act, and the Oil and Gas Production and Conservation Act provide the authority for supervising and controlling oil and gas activities. The two Acts are intended to ensure safety, protect the environment, conserve resources, promote the use of Canadian goods and services and to establish affirmative action programs.

The administration and disposition of minerals other than oil and gas are governed by the Canada Mining Regulations, promulgated under the Public Lands Grants Act and the Territorial Lands Act.

#### **Review 1981-1982**

During 1981, COGLA negotiated an exploration agreement, involving about 29 million hectares covering most of central Hudson Bay. The agreement involved a group of three oil companies: Canadian Occidental Petroleum Ltd. (the operator), Sogepet Ltd. and the Ontario Energy Corporation. Sogepet has subsequently assigned part of its 1/3 interest to SOQUIP, the Quebec provincial company. The agreement specifies a five-year work program consisting of seismic surveying, environmental studies and the drilling of one or more wells. The operator plans to conduct a 5 000 km seismic program in the summer of 1982 and has submitted an application for approval to carry out this work. The interpretation of this program and other available geophysical data may lead to petroleum prospects, which may warrant further exploration and possibly drilling.

In addition to working under the exploration agreement, the Companies currently hold several other permits and leases. There are 62 exploratory permits covering about 1.4 million hectares, located in the northern Hudson Bay area near Mansel and the Southampton Islands. Exploration has been suspended in this area since 1971 at the request of the native inhabitants. In the central Hudson Bay, Mobil Oil Canada, Ltd. holds 22 leases covering about 6.5 million hectares.

There has been no oil and gas exploratory activity in Hudson Bay since 1976. In 1974, the wells Aquitaine et al Narwhal South 0-58 and Aquitaine et al Polar Bear C-11 were drilled and abandoned, and the Aquitaine et al Hudson Walrus A-71 was re-entered and abandoned. Polar Bear C-11 and Hudson Walrus A-71 had minor gas shows. During the period 1965—1976, the petroleum industry spent \$22 million for drilling and \$19 million for geophysical exploration. The last seismic program was completed in 1975, and in 1976, a final aeromagnetometer survey was carried out.

#### **Canada Centre for Remote Sensing**

##### **Responsibilities**

The Canada Centre for Remote Sensing (CCRS) develops and co-ordinates a national program to produce remotely sensed data and derive information for the management of Canadian natural resources. In recent years this activity has included a concentrated effort in support of northern resources exploration and extraction.

## **Review 1981-82**

CCRS is continuing the development of remote sensing information systems to support petroleum exploration and delivery from Arctic waters. Present activity has included the use of aircraft-based microwave sensors to support exploration activities in the Beaufort Sea. This same facility is also presently being utilized to determine mission profile requirements for a planned Canadian microwave satellite, RADARSAT, which is planned to be the primary information source to support oil and liquefied natural gas extraction and transportation from the Arctic.

The CCRS Convair-580 aircraft, equipped with a synthetic aperture radar (SAR) and microwave scatterometer, has been used extensively during 1981-82 to gather information on ice type, ice movements, ice ridging, and ice pack formation. During the fall of 1981 these activities were concentrated on providing operational support to DOME Petroleum exploration and drilling operations in the Beaufort Sea. This work, which employed a data downlink to transmit SAR imagery to ships involved in drilling operations, provided real time support to the commercial activity. The potential of extended drilling seasons through the availability of this type of aircraft support has not only benefited the exploration activity, but has been also developed interest in remote sensing service organizations in acquiring similar aircraft facilities to meet the growing operational support demand. During this same time and as well during the Spring of 1982 additional missions were flown to collect ice information to support RADARSAT mission requirements studies. These activities were not only directed at determining the technical specifications of the sensors to be carried on the proposed satellite, but were also aimed at determining optimum satellite orbit parameters as well as frequency of coverage requirements.

The Canadian RADARSAT Program, which is presently in the Phase A Study stage, will provide, starting in 1990, complete coverage of the proposed Arctic transportation routes on a regular basis. The commitment to the use of microwave sensors on this satellite will ensure all-weather all-year coverage of the Arctic regions since microwave sensors do not require sunlight for operation and can penetrate cloud coverage.

## **Mineral Policy Sector**

### **Responsibilities**

The Mineral Policy Sector assists in the development of federal policies on mineral resources. It is concerned mainly with non-energy mineral resources and the contribution they make to the economy.

## **Review 1981-82**

During the year, the Mineral Policy Sector's northern activities involved special study groups that included representatives of the Federal and Territorial governments and industry. Activities also included a conference (the Federal-Provincial Mines Ministers Conference, January 18, 1982) and work on interdepartmental committees. These included: Northern Mineral Advisory Committee; MacMillan Pass Task Force; Interdepartmental Committee on Northern Mineral and Energy Resources Assessment; and Deputy Ministers' Committee on Native Land Claims.

Special Studies or projects initiated by the Sector, or to which the sector contributed, included:

MRI 81/1 Industry-Government Relations, Mineral Issues and Policy Framework — A Background Paper

MRI 81/4 Mineral Policy Alternatives—A Background Essay

MRI 81/5 Mining Legislation and Administration in Canada

MRI 81/6 The Non-fuel Mineral Industry to 1991: A Quantitative Outlook

MRI 81/8 Wages in the Mining Industry

MRI 81/12 Resource Assessment of Northern Lands — Federal Government Activities

Also available in the MRI series, to be published in 1982 is a study entitled "Alternative Technologies for Metal Processing — Implications for the Yukon."

The ongoing monitoring of the reserves and production of Canada's non-ferrous metal mines resulted in the publication of two documents: MR 191 Canadian Reserves as of January 1, 1981: Copper, Nickel, Lead, Zinc, Molybdenum, Silver and Gold; and, MR 192 Canadian Mines: Perspective for 1981: Reserves, Supply Capability, Development, Exploration.

The Mineral Policy Sector chairs the Federal-Provincial Mineral Statistical Committee, which includes participation by the Territorial Governments. In co-operation with Statistics Canada, the Mineral Policy Sector compiles and publishes annual mineral statistics, including northern mines. The Sector also published a monthly statistical report entitled Production of Canada's Leading Minerals.

Some entries in the National Mineral Inventory card file on northern mineral occurrences and deposits were updated. New cards were added, and some cards were consolidated. There were 2 394 cards in the file on the Northwest Territories and Yukon as of March 31, 1982. A computer index file system called MINSYS is now operational.

MRI 80/7, Canadian Mineral Deposits Not Being Mined in 1980, has been updated. Of the 1 453 deposits for all of Canada, 169, or 11 per cent, are from the Yukon and the Northwest Territories.

## **Plans for 1982-83**

The Sector will continue to gather data on northern mineral development. Advisory assistance will be given on issues such as northern mineral policy, comprehensive native claims, and the withdrawal of northern lands for parks. Finally, the Sector will monitor the policies that the Territorial Governments and Indian Affairs and Northern Development are formulating, and which affect the non-energy minerals industry.

## **Canada Centre for Mineral & Energy Technology — CANMET**

CANMET's research and development on steels for use in Arctic pipelines continues to be divided into three main areas: pipeline fabrication methods, pipeline degradation and inspection, and pipeline steel development and evaluation.

In pipeline fabrication, a preliminary investigation of weld consumables for normalized and stress-relieved pipeline fittings is being carried out. Contractual work to define parameters involved in hydrogen-induced weld cracking during field welding has been completed.

The Centre has been studying how mechanical and environmental factors can degrade pipelines. Studies of dented pipe will be completed this year. Environmental damage studies have involved examining the phenomena of sulphide stress cracking, stepwise cracking, and stress corrosion cracking of commercial pipeline steels.

The evaluation of current commercial pipeline steels has been completed. These studies included extensive measurement of their mechanical properties, residual stress, microstructures and their "weldability", both in the mill and in the field.

Work is continuing on a project to evaluate the toughness of bronze alloys from which ship propellers are cast. Evaluation of the fracture properties of ship plate for Arctic use is also continuing. The corrosion resistance of a variety of commercial alloys immersed in the waters of Barrow Strait is being studied along with the corrosion of welds in ice-breaking ships.

### **Plans for 1982-83**

In 1982-83, CANMET will extend its work on mechanical damage to pipelines to include the effects of gouges. Theoretical analysis will be used to develop a fracture control plan. Pipeline metallurgy will be advanced by examining possible methods that can be used to produce stronger steels. The possibility of measuring stresses in pipelines by magnetometer will be investigated.

In 1982-83, the Centre will continue its work on evaluating the toughness of bronze alloys for ship propellers and will carry out further corrosion studies as described above.

## **Surveys and Mapping Branch**

### **Responsibilities**

The Surveys and Mapping Branch provides geodetic, topographic and geographic information on the Canadian landmass by producing and distributing maps, aeronautical charts, aerial photographs, the National Atlas of Canada, the Canada Gazetteer Atlas and gazetteers of place names. The Branch also ensures that national, provincial and territorial boundaries are correctly positioned, marked and maintained. Surveying Canada Lands (national parks, Indian Reserves and territorial lands) is an added responsibility of the Branch. It also provides scientific and technical services to other federal and provincial government departments and agencies.

The Branch has seven units: Branch Headquarters, Geodetic Survey Division, Legal Surveys Division, Topographical Survey Division, Reproduction and Distribution Division, the International Boundary Commission and Geographical Services Directorate.

The Branch Director-General is Chairman of the Interdepartmental Committee on Air Surveys and the Co-ordinating Committee on Offshore Surveys. The Branch also provides the secretariats for the Canadian Council on Surveying and Mapping and for the Canadian Permanent Committee on Geographical Names.

### *Geodetic Survey Division*

#### **Responsibilities**

The Geodetic Survey maintains and extends a national survey reference system of selected stations, whose latitudes, longitudes and elevations have been accurately determined. This geodetic reference system is part of the larger North American continental system. It ensures the availability of geodetic information relating to the Canadian land-mass. This kind of information is essential for geoscience and environmental studies, engineering and natural resource development, national mapping and national security.

#### **Review of 1981-82**

Major network strengthening and densification were undertaken in the Arctic using the Satellite Doppler method. Ninety stations were established, mainly on Prince of Wales, Bathurst, Graham and Devon Islands. Additional stations were also established in the vicinity of Yellowknife and Great Bear Lake.

In the southern Yukon, altimeter traversing was completed for mapping of forty-eight 1/50 000 map sheets. Additional altimeter traversing was completed on Devon Island and in the vicinity of Hay River.

Survey mapping control by second-order traversing was also provided on Devon Island. In the Yellowknife-Hay River area, The Inertial Survey System (I.S.S.) was also used for mapping control.

#### **Plans for 1982-83**

Systematic densification of the primary horizontal control survey net by the addition of Satellite Doppler stations is planned in the southern Yukon, extending into the Northwest Territories to Great Slave Lake. Mapping control is scheduled in several locations in the Arctic—specifically in the group of islands stretching from Prince Patrick Island to Ellesmere Island, the western shore of Hudson Bay south of Rankin Inlet, the southern part of the N.W.T. to the east of Great Slave Lake, and in an area stretching northwards from Fort Simpson and Fort Providence toward Great Bear Lake. Various survey methods will be used in these areas. Reconnaissance and preparatory work are planned for two local precise control networks that will be used to monitor the stability of proposed Very Long Baseline Interferometry (VLBI) sites, one at Yellowknife and another at Whitehorse.

One or two geodetic horizontal control stations will be established, mainly by Satellite Doppler Methods, in each of the following settlements: N.W.T. — Snowdrift, Fort Resolution, Lac la Martre and Fort Liard; Yukon — Haines Junction, Teslin, Tagish and Carmacks. These stations will provide a geodetic positional datum reference for local surveys in these settlements and, in some cases, will also facilitate the positioning of air navigation aids.

## *Legal Surveys Division*

### **Responsibilities**

The Division carries out surveys for land or resources transactions connected with the administration and development of public or other lands. It ensures the accuracy of the property surveys, land descriptions and plans made under the Canada Lands Surveys Act and other Acts and regulations. The Division fulfills the federal obligations to define, survey and maintain provincial and territorial boundaries in Canada. Through its regional offices in Whitehorse and Yellowknife, the Division provides survey-related advice and assistance to local government officials and the public, as required.

### **Review 1981-82**

#### *Yukon Territory*

The Division carried out Legal Surveys under contract on various Indian lands at Teslin Post, Whitehorse, Upper Liard and Beaver Creek. A survey of Upper Bonanza National Historic site in Dawson was carried out for Parks Canada. Four lots were surveyed in Conrad for the Department of Indian and Northern Affairs. The division also surveyed 40km of boundary of Kluane National Park and re-surveyed the Kaku Indian Reserve in Northern B.C. Both surveys were carried out under contract. Under the Placer Mining Act six resurveys of parts of baselines in the vicinity of Dawson were completed. Staff from the Regional Office and Geodetic Surveys, re-surveyed the Yukon-Northwest Territories boundary in the area of Macmillan Pass.

Two inspection surveys near Whitehorse and one north of Elsa were carried out on mining claims. Examinations were completed on 65 plans under the Canada Lands Surveys Act, and 29 under the Land Titles Act. The Division issued 48 sets of instructions.

#### *Northwest Territories*

Contracts for surveys of 42 summer residential lots and one for a survey at Hay River were issued. In addition, 63 sets of instructions were issued. Staff were involved in control surveys and targeting for the Northwest Territories Government community development projects in Cambridge Bay, Pelley Bay, Gjoa Haven, Fort Resolution and Norman Wells. Regional staff also completed a topographical survey in Grise Fiord to enable the N.W.T. Government to carry out land use planning.

During the year, 70 plans under the Canada Lands Surveys Act, and 27 under the Land Titles Act were examined. Inspections at Norman Wells and on two Co-ordinated Survey Areas (C.S.A.) at Hay River and Yellowknife were completed. Targets were painted on selected co-ordinated survey-control monuments in the Yellowknife C.S.A. for the Government of the Northwest Territories. Maps sales were taken over from the Department of Indian and Northern Affairs (DINA) and a map sales outlet was opened in the Regional office.

## **Plans for 1982-83**

#### *Yukon Territory*

The Division's activities will include surveying work in Indian communities, isolated posts and carrying out some Placer Mining baseline surveys. Monuments will be placed for Doppler control for future large-scale mapping in smaller Yukon Territory communities. The Division may carry out more surveying on the boundary of Kluane National Park. To ensure the continuing high quality of surveys, five inspections will be carried out and maintenance work will be done on the Whitehorse Co-ordinated Survey Area.

#### *Northwest Territories*

Approximately 25 summer residential lots will be surveyed in the district of Mackenzie for DINA. The Division will carry out targeting for photomapping at 1:10 000 scale for the Department in various locations, and will set photo control in two communities for the government of the N.W.T. Lands set apart for Indian use in 25 communities, mainly along the Mackenzie River, will be located and identified.

The Yellowknife office will carry out two inspections and continue its regulatory functions for Canada Lands within the Northwest Territories. The office will also continue to examine plans under the Land Titles Act.

## *Topographical Survey Division*

### **Responsibilities**

The Division is responsible for producing and maintaining topographic maps of Canada for general purposes at scales of 1:250 000 and 1:50 000. These maps are produced to satisfy the needs of resource development, regional and urban planning and development, environmental management, engineering construction, national defence, and recreation. The Division provides technical advice to the Canadian International Development Agency and other government departments and agencies on mapping projects; it also provides technical and administrative services to the Interdepartmental Committee on Air Surveys.

### **Review of 1981-82**

In 1981, the Division carried out extensive aerial photography in the North for 1:50 000 mapping. Indexes showing the present areas covered by aerial survey photography may be obtained from the National Air Photo Library, 615 Booth Street, Ottawa, Ontario, K1A 0E9. Topographic map indexes are available from the Canada Map Office, 615 Booth Street, Ottawa, Ontario, K1A 0E9.

In the North, 479 new 1:50 000 maps were completed and 44 maps at the 1:250 000 scale were overprinted with revisions. Some maps for northern Canada were revised by adding data located by LANDSAT (land satellite) imagery.

## **Plans for 1982-83**

The Division expects to produce 280 new 1:50 000 map sheets of areas in northern Canada during the coming fiscal year. This figure includes maps produced in-house and those done under contract.

In 1982-83, 42 000 km of photography will be ordered for 1:50 000 scale mapping in the Northwest Territories and Yukon Territory. About 65 per cent of the photography ordered in the North is usually completed successfully.

## *Reproduction and Distribution Division*

### **Responsibilities**

The Reproduction and Distribution Division is responsible for the photo-mechanical, phototypesetting, lithographic printing and bindery services for the Surveys and Mapping Branch's mapping products. It also reproduces maps for other federal and provincial government departments and agencies and for users in the municipal and private sectors. The Map Reproduction Centre provides these services on a cost recovery basis.

The Division, through the Canada Map Office (CMO), is also responsible for the storage, retrieval, mail order sales and distribution of all specialized maps acquired from other federal government departments, and all topographical and thematic maps, aeronautical charts and publications and related air information produced by the Surveys and Mapping Branch. The CMO also maintains and supports an authorized topographical map and aeronautical chart dealer network throughout the world.

The National Air Photo Library (NAPL) is responsible for the indexing, archive storage, retrieval, sale and distribution of products and information related to federally owned or controlled aerial survey, airborne remote sensing and satellite imagery. The NAPL Reproduction Centre processes the film, reproduces the imagery and has custody of the original material.

### **Review of 1981-82**

The Division printed 462 line maps and 3 photomaps of the National Topographic Series. Printing services were provided for all Canadian Aeronautical Charts including nine new Joint Operation Graphic (J.O.G.) Charts. The Division provided printing services both to Environment Canada for 29 Northern Land Use Information maps, North Baffin Island area, and to Agriculture Canada for 2 maps showing the soil structure of Nahanni National Park. It also printed 28 charts of Northern Waters for the Canadian Hydrographic Service of Fisheries and Oceans.

The Canada Map Office received 578 orders for maps and charts from the Yukon and Northwest Territories for a total value of \$120 187. It filled 23 requests from the Yukon Territory and 42 from the Northwest Territories for air photo products and services.

The map and chart consignment centre in Yellowknife was transferred from the Department of Indian and Northern Affairs to the Surveys and Mapping Branch, Legal Surveys Division, in the Yellowknife regional office. This office is now the main distribution centre for maps, charts and aerial photographic products in the Northwest Territories.

### **Plans for 1982-83**

The Division, through its Legal Surveys regional offices in Yellowknife and Whitehorse, will continue its efforts to publicize information on the availability and use of maps, charts, aerial photographic products and other services offered by the Surveys and Mapping Branch.

The Map Reproduction Centre will continue to provide map reproduction and other services in the coming year.

## *International Boundary Commission*

### **Responsibilities**

The work of the Commission is largely one of boundary maintenance and regulation of works within 3 metres of the boundary. The Commission also determines the position of the boundary should questions arise between the governments of Canada and the United States.

### **Review of 1981-82**

There was no boundary maintenance required for that part of the boundary north of 60°.

### **Plans for 1982-83**

There are no planned operations in the North for fiscal year 1982-83.

## *Geographical Services Directorate*

### **Responsibilities**

The Directorate is responsible for designing and producing small-scale maps, The National Atlas of Canada, aeronautical charts and flight information publications. It also operates a toponymic (geographic names) service and provides cartographic support services to federal and provincial departments and private agencies.

### **Review of 1981-82**

During the year, more maps of The National Atlas of Canada became available at the publication scale of 1:7.5 M portraying the country as a whole. All the maps include coverage of Canada's northern areas up to the North Pole. The following maps (available in separate French and English versions) have been published thus far:

Canada — Census Divisions and Census Subdivisions 1971  
Canada — Divisions et Subdivisions et Recensement 1971

Canada — Indian and Inuit Communities Languages  
Canada — Agglomérations et Langues Indiennes et Inuit

Canada — Energy  
Canada — Énergie

Canada — The 31st Parliament  
Canada — Le 31<sup>e</sup> Parlement

Canada — Results of the 32nd Federal Election February 18, 1980  
Canada — Résultats de la 32<sup>e</sup> Election Fédérale, le 18 février 1980

Canada — Agricultural Lands  
Canada — Terres Agricoles

Canada — Soil Capability for Agriculture  
Canada — Les possibilités agricoles des sols.

Canada — Indian and Inuit Population Distribution.  
Canada — Repartition des Populations Indienne et Inuit.

Canada — Heating Degree Days  
Canada — Degrés-jours de chauffage

Canada — Growing Degree Days  
Canada — Degrés-jours de croissance

Canada — Last Frost in Spring  
Canada — Dernière Gelée du Printemps

Canada — First Frost in Autumn  
Canada — Première Gelée d'automne

Canada — Frost-free Period  
Canada — Période sans gel

The National Atlas maps have included themes on agriculture, climate, international relations, federal harbour facilities, federal election results and Indian and Inuit communities and languages. The Atlas also includes a general reference map of Canada.

Nine maps were completed depicting geodetic control networks in Canada, including those in the North.

A Gazetteer update in microfiche form was completed for the Northwest Territories.

Cartographic support services to other departments and agencies have included the production of a map for Environment Canada depicting waterfowl kill surveys from 1968-1979.

Aeronautical charting activity for pilots flying under Visual Flight Rules (VFR) in the Canadian North during 1981-82 included the production of 36 revised charts at the scale of 1:500 000 and 5 at the scale of 1:1 000 000. The Aeronautical Strip Chart, at a scale of 1:500 000, covering the Alaska Highway between Fort Nelson and Northway, Alaska, was also revised.

Various charts for pilots flying under Instrument Flight Rules (IFR) were revised periodically as shown: High and Low Altitude Enroute Radio Navigation Charts (revised every 56 days), IFR Supplement (56 days), Northern Supplement (56 days), Water Aerodrome Supplement (6 months), Canada Air Pilot Amendments (28 days), Designated Air Space Handbook (112 days), and the Flight Planning and Procedures Publication (revised every 6 months). All these publications have sections pertaining to flight in the Canadian North.

### **Plans for 1982-83**

The Directorate's planned mapping activities for the north, include completing maps for The National Atlas of Canada. Themes include: oil and natural gas pipelines; coal; road transportation; Indian and Inuit communities; Indian and Inuit population distribution; time zones; Canada at Confederation; Territorial evolution; Native peoples (1630); solar radiation; population distribution; drainage basins; cities, towns and villages; and the electrical transmission grid and the location of generating stations with an indication of energy source.

## *Geothermal Studies*

### **Responsibilities**

The Geothermal Service of the Division of Seismology and Geothermal Studies provides information on the thermal regime of the Canadian landmass and surrounding waters as related to geotectonics, permafrost distribution and characteristics, the potential for geothermal energy development and the thermal properties of earth materials. Field measurements of sub-surface temperatures and laboratory measurements of the thermal and heat generation properties of earth materials form the data base.

### **Review of 1981-82**

The acquisition and preservation of deep temperature data in Arctic wells has continued. Eleven new sites in the southern Yukon were added in 1981; to date, precise temperature data to depths greater than 125 m are available at about 130 sites in the permafrost region of Canada. The results for these sites are compiled in the eight volumes of the Northern Data Collection, the most recent of which is Geothermal Series #13, published in 1982.

Thermal conductivity measurements have been made on samples from many of these sites. A preliminary analysis of several regions has demonstrated the variability of permafrost thickness and sub-surface thermal regime with terrestrial heat flux, lithology, and past temperature changes impressed upon the ground surface through climatic change, glacial history and transgressing or regressing coastlines.

A small contract is supporting a university student who is carrying out a comprehensive geothermal/geomorphic study as an MSc. thesis, of the Sabine Peninsula, Melville Island. Production wells and a natural gas pipeline are proposed for this area as part of the Arctic Pilot Project. All of this work receives logistic support from the Polar Continental Shelf Project, EMR.

Studies of the shallow thermal regime of permafrost have continued through field programmes at Alert, on Northern Ellesmere, at Illisarvik on Richards Island in the Mackenzie Delta, along the route of the proposed Alaska Highway chilled gas pipeline in the southern Yukon and in the more northerly Eagle Plains region. At Alert, the most northerly permafrost monitoring site in the world, observations of temperature, snow cover, density and thickness have continued in five boreholes to depths of 60 m for a period of two years, through the co-operation of the Department of National Defence and the National Research Council.

In the Mackenzie Delta at the Illisarvik site (a lake drained artificially in 1978), nine more holes were jet-drilled and instrumented with thermistor cables. Permafrost has grown from 5 to 8 m into the bowl-shaped unfrozen zone under the lake bed; this talik extends to approximately 15 to 30 m, at which depth permafrost is again encountered. Studies by several universities are providing additional information on the pre-drainage history of the lake, through studies of stable isotopes and radiocarbon dating, development of post-drainage landforms and the revegetation of the lake-bottom.

Under Energy Research and Development funding, a number of contract investigations have continued to study gas hydrates, the behaviour of soil moisture in cold regions, the impact of climate change and the implications for resource development. Oxygen and hydrogen isotopic studies have provided information on the lake history at Illisarvik and on the role of moisture migration in the refreezing process. The time domain reflectometry technique, developed in earlier contracts to measure the water content in soils, was used in a contract this year to assess its potential for monitoring soil freezing hydrology non-destructively. A contracted study of climatic change is underway to assess its implications for pipelines, principally in Yukon. Another contract continued the development of the Brillouin spectroscopy method to measure the elastic constants of Structure I and II hydrates.

#### **Plans for 1982-83**

The Geothermics group will attempt to keep pace with the increased needs associated with resource development, while continuing its important fundamental research. Contract investigations in the coming year will include joint experiments on the behaviour of a chilled pipeline at a controlled environment research facility at Caen in northern France. The Group will study the feasibility of constructing a similar research facility in Canada and examine the problems associated with instrumenting offshore wells for long-term permafrost studies. Finally, the Geothermal group will continue to visit field sites, to abandon sites at which observations are complete and to acquire new sites in as yet poorly documented areas.

#### *Division of Geomagnetism*

##### **Responsibilities**

The Division of Geomagnetism provides information on the direction and intensity of the earth's magnetic field over Canada and adjacent ocean regions. It publishes magnetic charts of Canada and provides information for many other maps (including aeronautical and marine charts) about the angle between true north and magnetic north and its change from year to year. The Division provides information on the structure of the earth's crust and reference fields for the interpretation of the more detailed commercial surveys carried out in exploration for minerals, oil and gas. The magnetizations acquired by rocks at their initial formation and during their subsequent history are analysed to learn when and how geological structures were formed. Knowledge of the evolutionary process is important in understanding how fossil fuel and mineral deposits originated and where they might be located.

The Division of Geomagnetism records and analyses rapid variations of the earth's field, with periods measured in hours or seconds. Twelve magnetic observatories continuously record these changes in Canada. Three are in the auroral zone and five in the polar cap, north of the auroral zone. The rapid magnetic variations provide information on electric currents in the ionosphere and on the physical properties and dynamic behaviour of the magnetosphere. These studies have practical application in the North, in the fields of telecommunications, transmission of electric power, and the investigation of deep crustal structure by electromagnetic induction.

#### **Review of 1981-82**

Magnetic observatories operated continuously through 1981-82 at Alert, Mould Bay, Resolute, Cambridge Bay, Baker Lake and Yellowknife. Recording of magnetic variations in digital form continued at Igloodik, where personnel of the Department of Indian Affairs and Northern Development operate the equipment. The magnetic repeat station at Whitehorse was re-occupied to provide information on the secular change of the earth's magnetic field required for the updating of marine and air navigation charts.

Paleomagnetic sampling of sedimentary formations in the Arctic Islands was continued with the collection of Devonian rock specimens on Ellesmere Island and Carboniferous and Permian specimens on Axel Heiberg. The first Devonian pole position from the Arctic Platform was established from a suite of rocks collected earlier on Prince of Wales Island. Analyses of rock units from the Little Dal Group and the Tsezotene Formation of the Mackenzie Mountains were completed. Further samples were collected in this region from the Redstone River Formation and other units.

#### **Plans for 1982-83**

The six magnetic observatories will operate throughout 1982-83. In the continuing program of secular change studies, magnetic repeat stations will be re-occupied at Pond Inlet, Clyde River, Igloodik, Repulse Bay, Coral Harbour, Cape Dorset, Inuvik, Sachs Harbour, Eureka, and Pangnirtung. In addition, the Division will make a special series of magnetic repeat observations at three stations (Old Fort Rae, Fort Conger, and Clearwater Fiord) occupied 100 years ago during the first International Polar Year of 1882-83. Paleomagnetic sampling of Cretaceous volcanic and sedimentary rocks from northern Ellesmere Island is planned. Analysis of rock units collected in the Mackenzie Mountains, N.W.T. will continue.

#### *Division of Seismology*

##### **Responsibilities**

The Seismological Service of the Division of Seismology and Geothermal Studies determines the parameters of all significant earthquakes in northern Canada and offshore areas, and provides assessments of earthquake risk. Research on the structure and properties of the Arctic lithosphere is conducted by deep-sounding experiments, by surface wave dispersion studies and by study of seismic wave velocities from Arctic earthquakes. Studies of the source mechanisms of earthquakes in active seismic zones provide data for investigations of seismotectonic processes and for calculations required for earthquake-resistant design. A network of seismograph stations is maintained in northern Canada, and field experiments on deep seismic sounding are conducted.

## **Review of 1981-82**

Standard seismological observatories were operated at Alert, Mould Bay, Resolute, Frobisher, Inuvik and Yellowknife and regional observatories continued to operate at Baker Lake, Whitehorse and Igloolik, the latter with co-operation from the staff of the Igloolik Research Laboratory. The three regional seismological observatories in the southwestern Yukon, near Dezadeash, Klwane Lake and Koidern, established in a joint venture with Foothills Pipe Lines (South Yukon) Ltd., were closed at the termination of the joint venture. A new regional observatory was established at Haines Junction, with the monitor installed at the Parks Canada Visitors Centre. In a joint venture with Dome Petroleum, two additional regional observatories were established; the special network now monitoring the seismicity of the Beaufort Sea includes stations at Sachs Harbour, Tuktoyaktuk, Nicolson Point and Komakuk Beach. The Yellowknife seismological array continued operation and the automatic data facility continued to send digital information on detected seismic events to the Ottawa computer. Seismic data on global events detected at standard observatories are relayed via Ottawa through a computer link to the National Earthquake Information Service in the United States. The Yellowknife detection bulletin is transferred by computer link to research groups in the U.S. and U.K.

Routine analysis of all detected earthquakes in and near the Canadian North continued. Bi-monthly lists of all earthquakes are prepared about six months after their occurrence, and final findings are published in annual catalogues. Rapid determinations are made of earthquakes of special concern or scientific interest, such as the magnitude 5.6 event in southern Davis Strait on August 24, 1981 and the magnitude 5.3 event on the Arctic Ocean coast northwest of Ellef Ringnes Island on November 21, 1981.

Research on seismic risk in northern Canadian has continued. Models of earthquake source zones and revised strong ground motion attenuation relations have been employed to derive new probabilistic ground motion maps of peak acceleration and peak velocity at probabilities of exceedance of 10 per cent in 50 years. This information has been adapted to proposed new seismic zoning maps for a future edition of the National Building Code. The new maps also provide improved estimates of relative levels of earthquake risk in the North for facilities and structure not included in the normal provisions of the Building Code.

Special studies aimed at improving the understanding of earthquake potential in regions of petroleum exploration in the northern offshore have begun. In August 1981, an experimental deployment of ocean-bottom seismographs was undertaken in the Beaufort Sea in co-operation with the Atlantic Geoscience Centre and Dome Petroleum. A review has also been made of the geological and geophysical information available to delineate the earthquake zones affecting the Labrador Shelf.

A further interpretation of the LOREX refraction data has indicated a crustal root beneath the Lomonosov Ridge extending to a depth of about 28 km. The suggested crustal thicknesses of the adjoining Markarov and Fram basins are near 13 and 16 km, respectively. The velocity structure supports a theory favouring the ridge as a fragment split-off from the Barents-Kara Sea shelf.

## **Plans for 1982-83**

\*The seismological observatories in the North and the Yellowknife seismological array will be maintained. A fifth regional observatory is planned as part of the joint venture with Dome Petroleum. Planning is underway in co-operation with industry to install additional stations on the coasts of Labrador and Baffin Island to improve the monitoring of offshore seismicity in those regions. These facilities will continue to contribute important data to Canadian and international research projects.

The analysis and publication of northern earthquakes will continue on a current basis. Large, potentially damaging earthquakes will be identified and reported on as soon as possible. Detailed scientific studies of the larger northern earthquakes will continue as data and records become available.

The special studies of Beaufort Sea and Labrador Sea seismicity will continue. The earthquake data file for these areas will be critically assessed and, where required, re-evaluated. The correlation of seismicity with other geological or geophysical features will be studied to identify active seismogenic zones and to improve current estimates of earthquake risk. A high priority will be given to areas where resource development is currently taking place.

As part of the CESAR project, detailed plans have been developed jointly with the Atlantic Geoscience Centre on the crustal refraction experiment over the Alpha Ridge and adjoining basins. Preparation of related material for the summer 1982 sea lift is in progress.

## **Polar Continental Shelf Project**

### **Responsibilities**

The Polar Continental Shelf Project is responsible, first, for carrying out scientific investigations unique to the Arctic and, second, for maintaining and improving scientific logistic support systems in the Arctic. In fulfilling this second responsibility, the Department provides and maintains base camps, a radio network and aircraft with experienced crews. The PCSP supports research in disciplines within the mandate of EM&R and other government departments, and field resources are also made available to approved university and other non-government research projects.

### Review of 1981-82

Field work, carried out from mid-February to late September, was co-ordinated from PCSP base camps at Tuktoyaktuk in the Mackenzie Delta and Resolute on Cornwallis Island.

In 1981, PCSP supported a total of 166 scientific field parties in the Arctic. One oceanographic project, EUBEX (Eurasian Basin Experiment), was conducted in international northern waters. A Twin Otter aircraft equipped with a winch and sampling equipment visited 35 stations to collect high quality data as far east as 31° East and 85° North.

The main annual hydrography and gravity project was conducted in M'Clintock Channel and Peel Sound using through-the-ice sounding techniques with rain devices mounted on helicopters. Observations were recorded at 9971 stations. A four-year physical oceanography program in the Northwest Passage was begun with studies in Barrow Strait.

Several investigations of permafrost, oceanography and bathymetry were undertaken in the Beaufort Sea. Wildlife studies in 1981 were highlighted by studies of the Beverley and Porcupine caribou herds. A multidisciplinary group of scientists worked out of one campsite near Old Crow, Yukon, setting a precedent and an example for such studies and operational methods in the future. One of the more exciting archaeological events of the field season was the photographing of the sunken vessel Breadalbane, a supply ship sunk in 1853 off Beechey Island in 100 metres of water.

The Polar Continental Shelf Project supported the Arctic research of the following agencies in 1981:

Arctic Institute of North America  
British Royal Navy  
Defence Research Establishment Pacific  
Energy, Mines & Resources Canada  
Department of the Environment  
Department of Fisheries & Oceans  
Department of Indian Affairs & Northern Development  
Government of the Northwest Territories  
Government of Yukon  
J.A. MacInnis Foundation  
National Geographic Society  
National Museums of Canada  
Northern Alberta Institute of Technology  
Sir Sanford Fleming College  
Scott Polar Institute  
Swiss Federal Institute of Technology  
Transglobe Expedition  
Universities of Alberta

British Columbia  
Brock  
Calgary  
Carleton  
Guelph  
Hokkaido  
Lakehead  
McGill  
McMaster  
Ottawa  
Reading  
Saskatchewan  
Toronto  
Victoria  
Washington  
Waterloo  
Western Ontario  
Windsor  
Wisconsin

The following is a summary of work to which PCSP contributed support:

*Archaeology:* Old Crow Area  
*Investigator:* J. Cinq-Mars, National Museum of Man

A scientific consortium of several parties, all sharing a common interest, was formed to excavate Pleistocene exposures and to conduct paleontological and paleobotanical investigations. A major discovery was made with respect to paleoecological studies. Two rare species of beetles were found, that were common in Old Crow Pleistocene assemblages, but which had never been collected alive in Yukon before.

*Archaeology:* Bache Peninsula  
*Investigator:* P. Schledermann,  
Arctic Institute of North America

A survey was conducted to further investigate and excavate camp features situated along the "early Dorset" ridge on Longhouse site.

A good faunal sample and diagnostic artifacts were retrieved, placing the occupation tentatively in the early (to middle) range of the Dorset period. The trait of joining hearth features for probable special occasion gatherings seems to have been practised during most of the Dorset continuum. The testing of a third depression also revealed a deeply-buried, Ruin Island type dwelling. The site produced several pieces of iron of apparent Norse origin. There are no earlier structures on the site, clearly suggesting that we are working with the pioneering appearance of the Thule culture in this region and perhaps the eastern High Arctic. Fire hearths have not been found within any of the longhouses. The long hearth rows associated with the Dorset occupation on these sites probably related to very specific ceremonial occasions, when communal activities took place as part of a particular ritual. It is now quite evident that Arctic Small Tool tradition camps from various time periods are much more numerous in this area than was previously believed.

*Archaeology:* Eastern Axel Heiberg and Northern Ellesmere Islands  
*Investigator:* P.D. Sutherland, McMaster University

Full scale excavations were carried out at Buchanan Lake, a Dorset/Thule settlement on Axel Heiberg Island and at Maxwell site, a Thule occupation on Gilman Bay, Ellesmere Island.

Excavations at Buchanan Lake revealed evidence of a far more extensive Dorset occupation than was previously thought to have occurred. These excavations may provide much useful information on Dorset settlement patterns and the relationship between late Dorset and early Thule cultures. Late Dorset and early Thule people may have come into contact at this site.

A Thule hunting camp was located through a helicopter survey in Clements Markham Inlet. The camp is the most northerly Thule site to be investigated in Arctic Canada.

*Archaeology:* Somerset Island  
*Investigators:* E. Bielawski and S.C. Cole,  
Northern Heritage Society, N.W.T.

The objective of the Northern Cultural Heritage Project is to combine scientific research in the Northwest Territories with an education and employment program for young northerners. In the summers 1979 to 1981, 20 young people from different communities throughout the Territories were employed and trained as scientific field assistants. The education and training component, designed specifically for Inuit and other young northerners, provides an opportunity for them to develop skills, obtain work experience and expand their future career and employment options. The Project also gives them an opportunity to learn about their northern heritage by studying Arctic history, prehistory and anthropology.

*Archaeology:* King William Island,  
Adelaide and Boothia Peninsulas  
*Investigator:* J.M. Savelle, University of Alberta

The 1981 research, in conjunction with that conducted during 1980, has contributed significantly to the archaeological information on 'classic' Thule, 'modified' Thule, and early historic Netsilik Inuit in the Netsilik 'core' area and peripheral regions. Research has yielded information on such topics as territorial bases, subsistence economies, settlement distributions, material culture, and social patterning.

*Archaeology:* King William Island  
*Investigator:* O.B. Beattie, University of Alberta

The undisturbed remains of a Sir John Franklin expedition member were discovered near Booth Point on the southeast corner of King William Island. Subsequent analysis of these remains has shown them to be from a 20 to 30 year old male of probable Caucasoid origin who was suffering from scurvy at the time of death. Other skeletal indications provide evidence of cannibalism.

This survey has produced the only in situ excavation, documentation and osteological analysis of human skeletal remains from the last Sir John Franklin expedition. Other skeletal information suggests that the accepted path of retreat may not in fact be the correct one.

*Archaeology:* Banks and Victoria Islands  
*Investigator:* C.G. Hickey, University of Alberta

A project was conducted to determine the effects on Copper Inuit culture of the sudden availability of large quantities of valuable materials through the salvaging of H.M.S. Investigator and/or her caches between 1854 and 1890.

Three archaeological sites were mapped. An "Apple II Plus" microcomputer, used in the field and powered by a wind charger, worked effectively. The survey was successful in delimiting the apparent northern limits of nineteenth century Inuit occupation on Banks and Victoria Islands.

*Archaeology:* Banks Island  
*Investigator:* T. Will, University of Alberta

The main objective of this research is to reconstruct the subsistence economy of 19th Century Copper Inuit who lived on Banks Island. Food bone refuse is being used to provide information on butchering methods, animal species hunted for food and seasonal and geographical variations in the Inuit subsistence behaviour. Muskox was the most common food species and snow geese were frequently taken. Caribou, however, are noticeably absent from the research sites.

*Archaeology:* Navy Board Inlet  
*Investigator:* G. Mary-Rousselière

Investigations of the puzzling house complex N73, continued. Six square meters were completely excavated, sometimes to a depth of 80 cm. Among the more than 1050 artifacts collected are several ivory and wood carvings, the most interesting of which is a small Greenland whale carved in ivory. Six or seven samples of cut human hair have been found in Dorset sites of the region. This indicates that Dorset people may have cut their hair with microblades.

*Ecology:* Arctic char resources, Lake Hazen  
*Investigator:* A.H. Kristofferson, Fisheries and Oceans.

To determine the present extent of angling pressure on charr the extent to which charr stocks in the lake are being affected by fishing, gillnets of a variety of sizes were set to gather samples of charr for standard biological information. Beach seining was carried out at a number of locations to collect young charr. Arctic charr is abundant and apparently in good condition. The structure of this stock is extremely complex. Remarkably, characteristics are identical to those of fish sampled by Dr. I.A. McLaren in 1958. We conclude that simple Arctic ecosystems may not be as unstable as was previously postulated.

*Biology:* Caribou, Beverly herd, Aberdeen Lake  
*Investigator:* A. Gunn,  
Government of the Northwest Territories

The immediate objective was to collect baseline information on the behaviour of undisturbed caribou during their calving and post-calving periods. Six hundred and fifty-eight behavioural samples were obtained, describing activity patterns of cows and their calves. Data were also obtained on the frequency and duration of nursing bouts, aggressive acts and alarm stances. The period of calving was earlier and more prolonged than usual, and conditions of snow and weather were favourable to high calf survival.

*Biology:* Caribou, Porcupine herd, Dempster Highway  
*Investigator:* D.E. Russell, Yukon Government

Fixed-wing and helicopter aircraft were used to examine spring migration of the Porcupine herd. To aid in monitoring the movements of these animals to their spring staging areas in Yukon, ten bulls were radio-collared. This also helped to relocate bulls during post-calving census period.

Bulls remained in their late wintering areas until April 20 and many crossed the Dempster near Chapman Lake. Many crossed the Eagle Plains to the Keele Range.

During late winter, cows moved from concentration areas east of the highway across the Eagle Plains and into the Keele Range, across the Porcupine River in the vicinity of the Bluefish River. All cows collared in the area remained in the Wernecke Mountains during spring migration, and surveys were able to identify timing and location of calving for this herd.

*Biology:* Freshwater fish, Central Arctic Islands  
*Investigator:* B. Stewart, Fisheries & Oceans

Arctic char and sculpin were the only fish species caught in lakes north of 74° latitude. Data on fish growth rates, diet, parasitism, reproduction, distribution and abundance are currently being analysed. This information, together with other data, will be drafted onto land use maps.

*Biology:* Fish Habitat, Tuktoyaktuk, N.W.T.  
*Investigator:* W.A. Bond, Fisheries & Oceans

During the summer, the nearshore appears to serve as an important migration corridor through which fish gain access to important feeding, rearing and overwintering areas. Recent studies indicate that certain species migrate from coastal waters to fresh water lakes located on the Tuktoyaktuk Peninsula. A two-year study was started to determine the significance of fish habitat of two watersheds draining into the harbour from the Tuk Peninsula.

*Biology:* Heavy Metal Monitoring,  
Little Cornwallis Island, Strathcona Sound  
*Investigator:* S. Metikosh, Indian & Northern Affairs

Samples of sediments, seaweeds, bivalve molluscs and sea urchins were collected from the vicinity of the Nanisivik and Polaris Mines. These samples will provide a firm data base for isolating the trends that are occurring near the mines relative to the uptake of metals and their movement through the food chain. At both sites, a number of one-half m grid photographs were taken to obtain a pictorial assessment of the abundance of marine fauna.

*Biology:* Insects, Mackenzie Delta  
*Investigator:* R.A. Ring, University of Victoria

Nine species of insects from three different geographical regions of Canada have been examined for their tolerance to freezing conditions, their supercooling capacity, water content and changes in biochemical characteristics during acclimation to sub-zero temperatures for varying periods of time. Glycogen levels in all species declined significantly during this period. Many variations in freezing tolerance were apparent among the six test species. The major conclusion that can be drawn from these studies is that the various species have different ways of adapting to low temperatures in order to survive.

*Biology:* Ornithology, Greater Snow and  
Brant Geese Eastern Arctic  
*Investigator:* A. Reed, Environment Canada

A survey was conducted on goose productivity and the effects of their grazing on vegetation in northern Baffin Island.

Of particular interest was the relatively small number of Greater Snow Geese observed on southern Ellesmere in contrast to the much larger numbers reported in that area in the early 1970's. Observations on the Melville Peninsula (Roche Bay) in 1980 and 1981 indicated a substantial decrease from 1979 in the number of breeding Snow Geese. The limited extent of these surveys means that their productivity can be estimated only roughly.

An encouraging "spin-off" from the aerial surveys was the finding of two small Ivory Gull colonies on the Bordeur Peninsula. For a long time, the Inuit of northern Baffin Island have been reporting that the species had been nesting on Brodeur but scientists had not been able to verify this fact.

*Biology:* Ornithology, Migratory birds, Melville Peninsula  
*Investigator:* P. Boothroyd, Environment Canada

Development of iron ore deposits located on the Melville Peninsula has been proposed. Aerial surveys and ground reconnaissance were conducted to determine the importance of the area for migratory birds during the breeding season and to determine the potential effects of developing the iron ore deposits. Information on vegetation communities in the area was also collected to permit analysis of Landsat data and production of vegetation distribution maps.

*Biology:* Ornithology, Peregrine Falcon, Northern Yukon  
*Investigator:* D.H. Mossop, Yukon Government

The entire historical breeding habitat of the peregrine was searched for detailed population monitoring. Gyrfalcon research on the north slope involved measurement of various parameters vital to developing criteria for managing the population.

*Biology:* Ornithology, Eastern Arctic  
*Investigator:* Austin Reed, Canadian Wildlife Service,  
Environment Canada

Surveys of breeding geese and banding operations were conducted but, because of poor weather and other logistical problems, the program was severely limited.

*Biology:* Ornithology, Seabirds, Hell Gate and Cardigan Strait  
*Investigator:* R.W. Prach, Canadian Wildlife Service, Environment Canada

Aerial surveys to document the use of western Jones Sound by marine birds continued. Preliminary estimates of their distribution and abundance in relation to specific marine habitats have been made. The objective of the long-term study is to investigate possible relationships between condition and breeding success and the availability and proximity of marine feeding areas to nesting colonies and sites.

*Biology:* Ornithology, Seabirds, Mackenzie Delta, Anderson River  
*Investigator:* T.W. Barry, Canadian Wildlife Service, Environment Canada

Nine aerial surveys were carried out to locate the major nesting and brood-rearing areas of common eiders in the Beaufort Sea, Amundsen Gulf and Prince of Wales Strait. These surveys allowed evaluation of important habitat for sea and coastal birds. The surveys made it possible to assign priorities for protecting the habitat areas in light of proposed development schemes. The only known nesting habitat of the Eskimo Curlew was investigated near Lac Rendez-vous and Franklin Bay.

*Biology:* Ornithology, Migratory birds, Baillie Islands, Yukon Coast  
*Investigator:* L. Allen, Canadian Wildlife Service, Environment Canada

A bird study was initiated to determine the species, number and distribution of birds in the King Point area and to identify any critical areas for birds which might be affected by port development. Baseline data were gathered on the species, number and distribution of moulting seaducks to compare bird usage before and after harbour development in McKinley Bay. Using these and all available data on bird distribution along the Beaufort Sea coast, maps will be compiled to delineate important bird habitat vulnerable to oil pollution. These maps can be then used to assist in oilspill clean-ups.

*Biology:* Ornithology, Seabirds, Penny Strait  
*Investigator:* S.D. MacDonald, National Museum of Natural Sciences

The annual investigations of nesting Ross's Gulls, and sea birds associated with the polynias in Penny Strait continued. Only one pair of Ross's Gulls was present. Common eiders in Penny Strait were reduced in numbers, and nest predation by bears was much in evidence. Exploratory studies of the Ivory Gull colonies on the Ellesmere ice cap were begun. Arctic hares were collected for studies on locomotion and energy reserves. The results indicate that they have the same muscle properties as other prairie hares do and that they contain extremely small fat energy reserves.

*Biology:* Ornithology, Seabirds, Coburg and Baffin Islands  
*Investigator:* D.N. Nettleship, Canadian Wildlife Service, Environment Canada

A total of 3073 Thick-billed Murre chicks were banded at Coburg Island between August 10-25. Two hundred and thirty-three of the chicks banded were weighed and measured; 69 of these were re-examined 8-10 days later providing growth-increment measures.

Coburg Island is an important site for studying the distributions, movements, survival rates and breeding performance of the Jones Sound/Lancaster Sound populations of Thick-billed Murre and Black-legged Kittiwake. Major banding operations of Northern Fulmars at Baillarge Bay, Baffin Island are not recommended. Unstable and friable rock presents too dangerous a situation for the researchers.

*Biology:* Reindeer Rangeland, Tuktoyaktuk Peninsula  
*Investigator:* R.A. Sims, University of British Columbia

The reindeer rangeland resources of the Tuktoyaktuk Peninsula area are being studied using a multi-stage remote sensing approach. At a reconnaissance level, LANDSAT scenes have been used to produce an image-mosaic with major rangeland units delineated. On the ground, vegetation, soils and general environmental features were described for 112 sites. Aerial transects were flown so that air photos and LANDSAT images could be checked. Some of the results can be immediately applied in developing plans for managing the reindeer herd.

*Biology:* Zoology, Caribou Northern Yukon  
*Investigator:* A.M. Martell, Canadian Wildlife Service, Environment Canada

The Porcupine Caribou Herd arrived on its calving ground about mid-May in 1981. Calving peaked about June 3-5 and cows and calves then moved west into Alaska. Information on animal activity patterns and habitat selection was gathered. At the time of calving, aerial surveys of radio-collared caribou showed that the bulls were distributed south and east of the calving grounds. The planned census of the herd could not be carried out because the cows and calves returned from Alaska unusually early (late June) and mixed with the bulls, and because no large aggregations formed.

*Biology:* Zoology, Caribou, District of Keewatin  
*Investigator:* F.L. Miller, Canadian Wildlife Service,  
Environment Canada

During June, 1981 an aerial survey was made of dead caribou calves on the Beverly herd calving ground. Seventy-nine calves and seven cows were found. Post-mortem examinations were conducted to determine the causes of death. Predation accounted for 54.2% of the deaths; 52.8% by wolves and 1.4% by grizzly bears. Primary or secondary stillborn or premature accounted for 34.3%; separation or abandonment 4.3%; pneumonia 2.9%; trauma 2.9% and shock 1.4%. Of the 79 dead calves, 27 were females, 27 were males. The sex of the remaining 25 could not be determined. Four of the seven cows had died of complications associated with giving birth, two from grizzly bear predation and one from wolf predation.

*Biology:* Zoology, crustaceans, Tuktoyaktuk, N.W.T.  
*Investigator:* J. Loaring, University of Windsor

A study of the ecology and population genetics of species of the crustacean *Daphnia* was conducted. Preliminary results indicate that *Daphnia pulex* populations from the western Arctic are genetically diverse. However, the diversity in populations found at Old Crow does not greatly exceed that present in populations from Inuvik, Tuktoyaktuk or Ontario.

*Biology:* Zoology, Bowhead whales, Beaufort Sea  
*Investigator:* M.A. Fraker, L.G.L. Ltd.

For two reasons, the southeastern Beaufort Sea was chosen as the location for carrying out research during the 1980 and 1981 summers on the behaviour of Bowhead whales, their responses to disturbance and feeding habits. First, the conditions for observing them are good in that region because the whales use the area for extended periods and the weather conditions are favourable. Second, offshore exploration is well underway in Canadian waters of the Beaufort Sea; accordingly, there are opportunities to observe whales in the presence of full-scale industrial operations. The experimental approach involved pre-disturbance control observations, disturbance and post-disturbance recovery observations.

Observations were made of Bowheads near a drillship, near industry boats, near full-scale underwater seismic operations and near a large dredging operation.

*Biology:* Zoology, seals, whales, Arctic Waters  
*Investigator:* T.G. Smith, Environment Canada

Studies of Arctic fox population dynamics were conducted in the Amundsen Gulf area. Concurrent studies of ringed and bearded seal fast-ice breeding habitat were done in the same area. Studies, in the Dundas Harbour area, of ringed seal behaviour and polar bear predation along the ice edge were initiated. Aerial surveys of ringed and bearded seals and beluga whales were done in Parry Channel. Behavioural studies of beluga whales were conducted from Cunningham Inlet during their period of aggregation in the estuary from early July to the end of August.

*Biology:* Pacific herring, Fish and Marine Mammals,  
Mackenzie Delta and Inshore Beaufort Sea  
*Investigator:* D.V. Gillman, Fisheries & Oceans, Winnipeg

A total of 1178 Pacific herring were captured and sampled. Data were collected on maturation sequence, gonad condition, spawning dates and age and growth patterns. Samples of roe were taken, processed on site and shipped south for quality testing and comparison with other herring roe products. The purpose was to determine whether a commercial roe harvest would be feasible in the Mackenzie Delta and inshore Beaufort Sea.

*Biology:* Plankton, Garrow Lake,  
Little Cornwallis Island  
*Investigators:* M. Dickman, Brock University  
M. Ouellet, University of Québec

Garrow Lake is the most northerly meromictic lake discovered to date. A survey was conducted to sample its water chemistry, phytoplankton, zooplankton and photosynthetic bacteria. The top layer of the lake profile (0-12 m) displayed relatively low levels of electrolytes. Below this layer, the major electrolytes increased rapidly from 12-20 m. It is at the boundary layer between dissolved oxygen and hydrogen sulfide, that the photosynthetic bacteria are located. The photosynthetic bacteria mark the transition from the base pycnocline, halocline and chemocline to the top of the permanently-stagnant monimolimnion. The salinity of the water below the halocline is three times greater than that of sea water.

*Biology:* Polar Bear, Baffin Island  
*Investigator:* R. Schweinsburg, N.W.T. Wildlife Service

During April and May of 1981, on northeast Baffin Island, 65 polar bears were tagged. The objectives were: to determine population size, range and distribution; to assess quotas for Cycle River and Broughton Island; and to assess the impact of oil development. No concentrations of bears were observed, while vast areas held few or no bears. Bears or their tracks were found offshore as far as 160 km. The low density of bears and the long movements of marked bears into the study area are unusual.

**Biology:** Polar Bear, Radstock Bay, Dundas Island,  
Rae Point  
**Investigator:** I. Stirling, Canadian Wildlife Service,  
Environment Canada

Polar bear management and impact assessment studies have been facilitated by examining existing data related to the animals' habitat utilization hunting efficiency, man/bear conflicts, bear interactions and movements. Research continued on the ecological interrelationships of polar bears in the High Arctic. The biological importance of polynyas to overwintering populations will be evaluated by studying winter and early spring distribution and abundance in and out of polynia areas. In addition, a monitoring study on the effects of industrial activities on the distributions and abundance of seals in the eastern Beaufort Sea was begun in 1981.

**Botany:** Tuktoyaktuk area and Sachs Harbour  
**Investigator:** J.M. Gillett,  
National Museum of Natural Sciences

Plant material of herbarium specimens was obtained for use in an International Exchange Program. Photographs will be used in an Arctic Plant Manual, which is in preparation.

**Botany:** Cornwallis Island and Queen Elizabeth Islands  
**Investigator:** John Peach, London, England

Investigations were undertaken into the distribution and classification of the forms of *Saxifraga oppositifolia* in the Resolute area of Cornwallis Island and other parts of Queen Elizabeth Islands. The two forms of particular importance at Resolute are *f. schofieldii* and *f. albiflora*. A narrow petalled form was widespread, and specimens secured on other islands around Cornwallis led to the conviction that the form is distinct enough to merit botanical recognition.

**Botany:** Lake Hazen  
**Investigator:** J. Gould, University of Toronto

This study involves a quantitative description of the major plant communities of the Lake Hazen Camp area, but excludes analysis of their possible ages as related to the Late Wisconsin glaciation. Intensive sites were established in eleven different communities; the depth of the active layer and slope aspect and angle were measured and soil samples were taken from different horizons in pits dug at each community. Moisture is the limiting factor affecting plant growth; increasing elevation does not appear to be a limiting factor.

**Botany:** Ecology, Alexandra Fiord  
**Investigators:** J. Svoboda and B. Freedman,  
Universities of Toronto and Dalhousie

The broad objectives are to determine the environmental factors which influence plant diversity and primary production in an uplifted lowland of favourable microclimates and moisture regimes. Within the scope of these objectives, studies were carried out of meso- and microclimate, soils, decomposition, distribution and production of plant communities and the aut-ecology of certain plant species.

**Botany:** Ecology, Oil Spills, B.I.O.S., Cape Hatt,  
Baffin Island  
**Investigator:** P. Blackall, Environment Canada

Over thirty tonnes of crude oil were released during the summer. The test oil plots laid in 1980 were re-sampled and surveyed, while the shoreline cleanup countermeasures went very successfully. A collection of additional physical data (oceanographic and meteorologic) began, in final preparation for predicting the optimum spill conditions. Little surface oil escaped from the boomed area. All losses were limited to thin sheens. The extent of the impact of the dispersed oil will not be known until the post-spill samples are analysed. The B.I.O.S. Project results now appear to be of great value; it is now certain that the last two years of the Project are critical and must proceed.

**Geodesy:** Victoria, Prince of Wales and  
King William Islands  
**Investigator:** D.L. MacQuarrie,  
Energy, Mines & Resources Canada

Projects were carried out to strengthen and densify existing horizontal controls. Two doppler base stations and two new doppler stations were spirit levelled. Two existing traverse side-shot stations were upgraded with four distance measurements. Twenty-nine existing horizontal control stations were targeted and 84 new doppler positions were established.

**Geology:** Biostratigraphy, Devonian and Upper Silurian,  
Eastern Arctic  
**Investigator:** B. Jones, University of Alberta

Twelve sections were examined in detail over a total of 5 500 m in which the dominant faunal element was brachiopods. This collection of approximately 6 000 Devonian bivalves from McCormick Inlet on Melville Island is rare and includes some of the best found anywhere in the world. Detailed analysis of the clay mineralogy and stable isotope geochemistry are now being examined for 3 500 m of Blue Fiord Formation in which the dominant faunal element in these Upper Silurian rocks was again brachiopods.

**Geology:** Bedrock Weathering, Ellesmere Island  
**Investigator:** S.H. Watts, Sir Sandford Fleming College

Under arid Arctic conditions, rates of physical weathering of outcrop surfaces are largely influenced by their mineral composition and texture. Hornblende has permitted accelerated weathering in otherwise massive, resistant rocks. Hydration and salt crystallization are recognized as major processes in outcrop deterioration. The age of these highly-weathered bedrock forms needs to be established in order to decipher the late glacial and post glacial histories.

*Geology:* Devon and Ellesmere Islands  
*Investigator:* L.C. Coleman, University of Saskatchewan

A reconnaissance search for meteorites was carried out on the ice cap of Devon Island and in the area where a large number of valley glaciers converge, with no outlet, in the southeastern part of Ellesmere Island.

It had been suggested that concentrations of meteorites on ice cap surfaces, similar to those that had been found in the Antarctic in recent years, might be found in the Canadian Arctic.

Unfortunately, snow accumulations during 1981 were such that any meteorites on the ice surface would have been covered.

It would seem possible to carry out such a search successfully by waiting for a protracted chinook or for rain to clear the snow from the ice cap surface.

*Geology:* Stratigraphy, Old Crow, Yukon Territory  
*Investigator:* D.K. Norris,  
Energy, Mines & Resources Canada

A re-examination of the stratigraphic succession on the northeast corner of Old Crow Flats revealed that the resistant beds capping many of the hills were probably of late Paleozoic rather than Jurassic age. Moreover, the highly-deformed stratigraphic succession along the Porcupine River upstream from the International Boundary is most probably entirely of Proterozoic age. Black shales exposed on the south flank of the Old Crow Range were confirmed to be of Middle Jurassic age.

*Geology:* Stratigraphy, southern Ellesmere Island  
*Investigator:* A.V. Okulitch,  
Energy, Mines & Resources Canada

Regional reconnaissance mapping and detailed stratigraphic and tectonic studies in southern Ellesmere Island were completed. Stratigraphical investigations consisted of systematic examination of the entire Paleozoic rock column. Cambrian to Middle Devonian formations are mostly carbonates. Middle and Upper Devonian rocks are terrigenous clastics deposited in non-marine environments. Structural investigations included delineation of major structures formed during Ellesmerian and Eurekan deformation. The complexity of structures and degree of crustal shortening are considerably greater than were formerly suspected.

*Geology:* Classification, Viscount Melville Sound  
*Investigator:* D. Welch, Environment Canada

An open-ended classification system is being developed based on landform associations that occur where the land and sea meet. This system will accommodate the variety of shore environments found along the Arctic coasts and will enable us to interpret air photographs rapidly. Each class is defined in terms of a typical range of morphology and materials. In 1981, the study included Bathurst, Melville, and northern Victoria Islands for a total of 20 map sheets. Landforms are mapped and classified by interpreting photos taken from the air on reconnaissance flights. Photos were also taken from landings in certain areas to "cross-check" the aerial photos. Coupled with other data on the Northern Land Use Information Series maps (such as data on geology, surficial materials, vegetation, marine mammals and sea ice conditions), this shore information can be used to corroborate interpretations derived from air observations.

*Geology:* Coastal processes, Bylot Island,  
Northern Baffin Island and Radstock Bay  
*Investigator:* R.B. Taylor,  
Energy, Mines & Resources Canada

It was noted that waves were tossing modern beach sediments to the top of the high rock cliffs along north Bylot Island, thus substantiating the belief that East Lancaster Sound can be a high-wave energy environment. Re-surveys of beach profiles near Pond Inlet showed that the beaches have been built up substantially since 1979. Other observations also provide the first indication that ground ice and ice-bonded sediment may affect the stability of the coarse-grained sediment beaches of Bylot Island, as they do along the shores of the Beaufort Sea.

*Geology:* Glacial geomorphology,  
Northern Ellesmere Island  
*Investigator:* J. England, University of Alberta

Field work was concentrated on Clements Markham Inlet and on the south-central margin of the Hazen Plateau. The objectives were, first, to improve the data base pertaining to the magnitude and timing of former glaciations and relative sea levels; second, to investigate the nature of extensive raised marine deposits to better understand the processes which operate in high Arctic fiord environments; and third, to core certain lakes that may contain long-term and continuous paleoclimatic records. When combined, these data should help to improve our understanding of high latitude environmental change, which departs significantly from existing models developed in mid-latitudes.

*Geology:* Geomorphology, Mackenzie Delta  
*Investigator:* J. Ross Mackay, University of British Columbia

At the Illisarvik Drained lake experimental site, work continued on measuring the growth of permafrost, the development of the active layer, the time of ice-wedge cracking and the rate of ice-wedge growth, subpermafrost pore water pressures, subpermafrost pore water salinities and electrical freezing potentials. Accurate temperature measurements shows that the "frozen fringe" (the zone between the 0°C isotherm and growing ice lens) may occupy a zone of perhaps a metre in aggrading permafrost, in contrast to the several millimetres observed in some laboratory experiments. The time of ice-wedge cracking and direction of propagation has been accurately measured with elapsed timers. Upward cracking from beneath a frozen lake has been confirmed, insofar as is known, for the first time. In the old Horton River Channel there is good evidence to show that ice wedges greater than 35 cm in width have grown in the past 200 years. Elsewhere the downward movement of water in the still frozen active layer in the thaw period has been monitored and indications are that there may be a summer downward movement and freezing of water. Furthermore, the high ice content layer so often found near the top of permafrost appears to develop partly from upward migration of water in winter and downward migration in summer.

*Geology:* Geomorphic processes, Banks Island  
*Investigator:* H.M. French, University of Ottawa

Investigations on southwest Banks Island of permafrost and ground ice bodies exposed in coastal sections were continued. Recoveries of Woodhead seabed drifters provided further evidence to support a model of inferred sediment transport.

*Geology:* Periglacial features, Resolute  
*Investigator:* A.L. Washburn, University of Washington

Research activities focused on selecting and instrumenting several experimental sites: a gelifluction lobe near the northwest end of "Airport Ridge" and a series of sorted circles along the north shore of the pond, west of the north antenna field. Research results included initial baseline readings at the experimental sites and recognition of several small palsalike features, apparently hitherto unreported from the High Arctic.

*Geology:* Permafrost, Tuktoyaktuk, N.W.T.  
*Investigator:* S. Kinosita, Hokkaido University

Studies were conducted to clarify the physical and chemical properties of the active layer from the viewpoint of the behaviour of the retained water and their relationship to environmental conditions such as ground morphology, fauna and vegetation.

*Geology:* Volcanology, Petrology, Somerset Island, Bathurst Island  
*Investigator:* R.H. Mitchell, Lakehead University

Detailed regolith mapping and a ground-based magnetic survey of the Ham kimberlite diatreme on Somerset Island was accomplished. The diatreme, a multiple intrusion consisting of at least three varieties of kimberlite, also proved to be a new locality for mantle-derived spinel and garnet lherzolites. All of the dikes sills and vents have now been examined in the northern portion of the Freemans Cove volcanic region of Bathurst Island. This suite of alkaline volcanic rocks is Canada's largest occurrence of nephelinite and one of the few of this type of continental rift volcanic activity in North America.

*Geology:* Quaternary, East central Ellesmere Island  
*Investigator:* W. Blake, Jr., Energy, Mines & Resources Canada

Ten ponds, frozen to the bottom, were cored. Four had been sampled on earlier visits. The longest core of frozen sediments recovered was approximately 6 m in length. Two lakes previously sampled were re-sampled using a modified Livingstone sampler. Four new lakes, the highest being approximately 650 m above sea level, were also sampled. Analysis of cores for age ( $^{14}\text{C}$ ), pollen stratigraphy, diatoms, algae, and moss flora continues, and both a pollen diagram and a diatom diagram have been constructed for a lake at the head of Baird Inlet. The oldest age determinations obtained so far show the initiation of organic sedimentation as occurring about 9 000 years ago.

*Geology:* Quaternary, Banks and Victoria Islands  
*Investigator:* J.-S. Vincent, Energy, Mines & Resources Canada

On Victoria Island, the objective is to prepare a series of surficial geology maps to describe and explain the deposits, landforms, vegetation, ground ice and geological processes. This information will aid in implementing the territorial Land Use Regulations and be pertinent to engineering construction, particularly if the Polar Gas pipeline crosses the area.

The stratigraphy of deposits was established, and samples were collected for sedimentological, paleoecological and geochronological studies. Limits of ice advance during two distinct stades of the last or Wisconsin Glaciation were established, as was the Late Wisconsin-Holocene marine limit.

On Banks Island, the sediments in the Duck Hawk Bluffs, among the oldest preserved Quaternary deposits in Canada, were studied to establish lithostratigraphy of events following the deposition of the Miocene Beaufort Formation.

*Geology:* Sedimentation, Beaufort Sea  
*Investigator:* K. Kranck, Fisheries and Oceans

A study of modern sedimentary processes in an area of high turbidity was carried out to observe what happens to the suspended sediment load of the Mackenzie River when it enters the Arctic Ocean. Total suspended sediment concentrations in the Mackenzie River were 38 to 46 mg/l. In the distributary channels of the Mackenzie Delta concentrations ranged from similar values down to 12 mg/l. In Shallow Bay and Kugmalit Bay, higher concentrations of 80-120 mg/l form a turbidity maximum between the Delta and the much lower concentrations of the offshore region (n 10-5 mg/l).

*Geology:* Slope processes, Bathurst, Cornwallis and Melville Islands  
*Investigator:* J.A. Heginbottom, Energy, Mines & Resources Canada

The experimental sites established in 1977 were visited in June 1981; various observations were made and recorded. A large, apparently active, gelifluction apron on southeast Bathurst Island was examined. A trench was excavated into the nose of the apron and a buried organic layer was traced for some 4 m under the apron. Samples were collected and have been submitted for radiocarbon age determination.

*Geology:* Surficial, Bylot Island  
*Investigator:* R.A. Klassen, Energy, Mines & Resources Canada

A study of the glacial history of Bylot Island was continued. On at least two occasions, glacier ice from ice sheets centered outside the region, has crossed onto Bylot Island.

During the last major glaciation by foreign ice, ice attained elevations of 800 m above sea level, across the outer coasts of southern Bylot Island. Grounded glacier ice filled the channels around the Island completely including Lancaster Sound and extended far out toward the head of Baffin Bay. This last glaciation could be early Wisconsinan.

This work has important implications for paleoclimatology.

*Geophysics:* Electromagnetism, Tuktoyaktuk, N.W.T.  
*Investigator:* D. Slaine, University of Waterloo

Investigation of two sanitary landfills on a permafrost environment was initiated to detect local ground water contamination. Contaminated ground water has a much higher conductivity than natural ground water due to increased levels of dissolved solids and chloride concentrations. The level of conductivity can be determined by electric and electromagnetic measurements.

*Geophysics:* Geomagnetism, Devon Island  
*Investigator:* P.B. Robertson, Energy, Mines & Resources Canada

A ground magnetic survey was carried out at the Haughton impact structure at roughly 5 km intervals, extending to 5 km beyond the outer rim of the 22 km diameter structure. The regional east-west magnetic trend is disturbed within the structure to a diameter of 14 km. A prominent positive anomaly overlies the centre of the basin, flanked to the north and south by negative anomalies. The central anomaly is interpreted as due to Precambrian gneisses and more mafic rocks which have been uplifted from roughly 1700 m possibly to within 200 m of the present surface, forming the central uplift of the complex impact structure.

*Geophysics:* Geothermal, Arctic Islands, Mackenzie Delta area  
*Investigator:* A. Judge, Energy, Mines & Resources Canada

Temperature logging of abandoned or suspended oil and gas wells continued in the Mackenzie Delta and the Arctic Islands. Ten more holes were drilled to depths of 60 m at the "Illisarvik" drained lake site in the Mackenzie Delta. Shallow thermal gradiometer observations were continued in the Beaufort Sea Shelf to define zones of seasonal freezing of sea-bottom sediments and to outline the distribution of aggrading permafrost.

*Geophysics:* Paleomagnetism, Somerset, Cornwallis, Prince of Wales Islands, N.W.T.  
*Investigator:* P. Lapointe, Energy, Mines & Resources Canada

In Lower Devonian time, these islands were in a paleolatitude of about 0°, an equatorial climate. More important is the fact that since this time no movement has occurred between the three islands. Samples were collected from the Red River Canyon Formation in the Canyon Fiord area and from Carboniferous and Permian rocks in the Nansen Sound area.

*Geophysics:* Seismic, permafrost, Eastern Beaufort Sea, Mackenzie Delta  
*Investigator:* J.A. Hunter, Energy, Mines & Resources Canada

Sub-seabottom hydraulic jet drilling sites were selected to determine the temperature distribution of the sub-seabottom permafrost from near-shore to off-shore, to measure uphole seismic velocities and to log associated lithologies. Eight holes were drilled to refusal at an average depth of 35.69 m below bottom, and uphole seismic was done in five holes. Geophysical results indicated the occurrence of ice-bonded permafrost at seabottom. Temperature results suggest the development of an active layer in summer months due to the influence of Mackenzie River water.

The Canadian Coast Guard ship NAHIDIK was used to obtain geological information on the structure of near-surface sediments by geophysical methods. This work was done to aid in interpreting the Quaternary geological history of the southern Beaufort Sea. Results of the seismic survey are currently being incorporated into the Beaufort Sea Distribution of Permafrost map.

*Glaciology:* Melville, Meighen, Ellesmere and Kent Islands  
*Investigator:* R.M. Koerner,  
Energy, Mines & Resources Canada

Field work was concerned with ice cap mass balance, borehole remeasurements and snow sampling. The mass balances of the Meighen, Melville, Devon (northwest side) and Agassiz (northern Ellesmere) ice caps were remeasured. Meighen's balance for 1978-80 was  $-1 \text{ g cm}^{-2} \text{ y}^{-1}$ , Melville's for 1974-80 was  $-5 \text{ g cm}^{-2} \text{ y}^{-1}$ , and Devon's for 1979-80 was  $6 \text{ g cm}^{-2} \text{ y}^{-1}$ . In the northern Ellesmere boreholes, drilled from surface to bedrock in 1977 and 1979, down-borehole photographs were taken, and closure rates, total vertical strain and temperatures were measured. Measurements were compared to those made each year since drilling. Core samples to a depth of 20 m in Agassiz ice cap and to 10 m near Mount Oxford—also in northern Ellesmere—were drilled to continue a study of acidity trends in High Arctic snow.

*Glaciology:* Axel Heiberg Island, N.W.T.  
*Investigator:* A. Ohmura, E.T.H. Zurich

The longitudinal profile of the White Glacier temperature measurements was completed by drilling three holes to the base of the Glacier and measuring the in-glacier temperature. The stakes for mass balance measurement on the White Glacier were also reset in the hope that the longest mass balance record in the Canadian Arctic will be continual.

*Hydrography:* M'Clintock Channel  
*Investigator:* P.V. Davies, Fisheries and Oceans

Beginning March 1, a total of 9971 spot soundings and about 1000 gravity readings were taken. A few check lines were run into the 1980 Decca chain coverage and more soundings taken to densify the grid. The work from both 1980 and 1981 was in complete agreement.

*Hydrography:* Sonar systems, Resolute  
*Investigator:* J. Medendorp, Fisheries & Oceans

The Marine Arctic Route Reconnaissance Systems (MARRS) was developed to provide complete bottom coverage of echo soundings from one hole through the ice to a maximum range of 1 kilometre. The MARRS sonar system was field tested 6 kilometres west of Resolute. The tests involved drilling a hole through the ice and lowering the transducer array below the ice. The 1 degree "pencil beam" was scanned  $90^\circ$  vertically and  $360^\circ$  horizontally. The MARRS field test was successful because it answered a number of questions. However, the MARRS system did not perform according to specifications and did not meet operational requirements. No further development will take place on this system, although it does appear to have been based upon a sound concept.

*Hydrography:* Tides, Norwegian Bay, Barrow Strait,  
M'Clintock Channel  
*Investigator:* B.J. Tait, Fisheries & Oceans

The Arctic Tidal Survey is a continuation of a multi-year project to carry out a comprehensive tidal survey for use in navigation and in the production of nautical charts. Five successful month-long tidal records were collected around Norwegian Bay in Jones Sound. The work consisted of eight month-long deployments in Peel Sound and two in Barrow Strait. After the month-long deployments were recovered, four gauges were re-deployed in Barrow Strait for retrieval in the spring of 1982.

*Hydrology:* Mould Bay, Resolute, Eureka  
*Investigator:* M. Woo, McMaster University

Investigations ranged from site-specific studies of hydrologic processes to an extensive traverse of drainage basins carried out at various locations in the Queen Elizabeth Islands. Several related projects were undertaken to study the snow, ice and permafrost hydrology of small basins.

*Hydrology:* Mackenzie Delta  
*Investigator:* S.C. Bigras, Environment Canada

A study was made to assess the potential impact of increased flow regulation of the Mackenzie River upon the Mackenzie Delta. Through the use of 16 mm time-lapse photography, it should be possible to assess the reservoir effect that the Mackenzie Delta lakes have on the inflow from the Mackenzie River. It should also be possible to determine whether or not the Delta region is a pulse-stabilizing system.

*Hydrology:* Mackenzie Delta Region  
*Investigator:* J.C. Anderson, Environment Canada

The primary aim of the study along the route of the proposed Inuvik-Tuktoyaktuk highway has been to identify potential icing sites and to gather data that can be used in designing highway culverts and bridges. A notable occurrence in 1981 was the formation of a large river icing, at least five kilometres long, extending from Noell to Jimmy Lake. Ice thickness along this 60 m transect varied from 1.0 to 1.6 m.

*Oceanography:* Barrow Strait  
*Investigator:* D.J. Brooks, Fisheries & Oceans

The general aim of this new project is to collect data on the magnitude of short- and long-term variations in the physical, chemical and biological properties of the water in Barrow Strait. A total of 81 CTD profile measurements were made for the regional survey of water structure within a network of 56 stations.

*Oceanography:* EUBEX, Eurasian Basin, Arctic Ocean  
*Investigator:* E.L. Lewis, Fisheries & Oceans

An airborne CTD survey covering the area of the ice edge north of Spitsbergen to  $85^\circ 30'$  North and from the Greenwich meridian to  $32^\circ$  East was carried out from Longyerbyen and the FRAM III ice camp. These measurements showed detailed features of the Atlantic water entering the Arctic Ocean and its cooling as it travels along the shelf break north of Spitsbergen. This current is the main inflow into the Arctic Ocean and affects the entire Basin.

*Oceanography:* Physical, Beaufort Sea  
*Investigator:* H. Melling, Fisheries & Oceans

An observational program conducted in the Beaufort Sea during March included installing current meters, which were recovered the following August. Observations were made west of the U.S. border in co-operation with the U.S. Coast Guard. CTD sections were taken extending from the deep basin waters to the edge of the landfast ice over a 750 km stretch of coastline. Sixty CTD profiles were acquired. Measurements verified the presence of a westward current jet overlying the continental slope. Measurements also demonstrated the existence of a thermohaline front on the outer shelf marking the boundary between waters of the Canadian basin and a mass of saline water at its freezing point, originating from ice formation over the continental shelf.

*Oceanography:* Polynyas, Sverdrup Basin  
*Investigator:* R. Lake, Fisheries & Oceans

Oceanographic measurements indicate a source of sensible heat in the form of warmer water brought to the surface during high current periods of the tidal cycle. The existence of the polynya depends on the balance between the oceanic heat source, the surface heat loss and mechanical removal of ice during periods of high current.

*Land Use Study:* Arctic Islands  
*Investigator:* G. Ironside, Environment Canada

The Northern Land Use Information Series of maps, sponsored jointly by Environment Canada and Indian and Northern Affairs, was started in 1971. Its purpose was to provide a generalized spectrum of baseline information for evaluating proposed land uses in the Northwest Territories and the Yukon Territory. The land resource input is compiled in the context of an ecodistrict land classification. Most of the Arctic Islands and the remaining parts of Keewatin should be mapped by 1988. The 1981 study area included Bathurst Island, Prince of Wales Island, Melville Island and northern Victoria Island.

*Land Use Maps:* Viscount Melville Sound area  
*Investigator:* G.G. McLean, Environment Canada

Land Use Information Series maps focused on the Viscount Melville Sound area. These maps combine a wide range of information on renewable and non-renewable resources, wildlife habitat, fish resources and fish harvesting. The maps provide data on the native use of land areas, land evaluation, coastal classification and biophysical interpretation, and cover a variety of other socio-economic and cultural topics.

*Meteorology:* Weather satellite, Arctic Islands  
*Investigator:* S. Washkurak,  
Energy, Mines & Resources Canada

Weather satellite reception at Resolute was more timely this season. Data were received from 05:00 to 07:00 a.m. Reception of TYRO data from ANIK and WESTAR was also tested. The primary application is to read out aviation weather data providing gross weather patterns in northern Arctic regions, including Alaska.

*National Parks*  
*Surveys:* Northern Banks Island  
*Investigator:* T.J. Kovacs, Environment Canada

The purpose of the survey was to check the consultants' recommendations for natural regions 37 and 38 and to establish a priority for Parks Canada on the selected Natural Areas of Canadian Significance.

The two NACS selections within region 38 were the Polar Bear Pass of Bathurst Island and the Bjorne Peninsula.

A Bylot Island/Eclipse Sound resource survey identified land and marine areas that may eventually be included in the park reserve.

*Remote*  
*Sensing:* Permafrost, Tuktoyaktuk Peninsula  
*Investigator:* D.D. Graham, Carleton University

Sampled active layer thickness and surface spectral signature data acquired from colour infrared aerial photographs were compared for five study sites. The thickest active layers are found in areas with strong near infrared reflectance where vegetation acts as a surrogate for gravel-rich substrate. The feasibility of using remote sensing to map active layer thickness was demonstrated.

*Remote*  
*Sensing:* Radar satellite, Beaufort Sea  
*Investigator:* R. Ramseier, Environment Canada

Studies were conducted on the response of microwave sensors to representative ice types. Studies on the structural and mechanical properties of sea ice were also carried out. Ice types included first-year columnar ice, first-year frazil ice, multi-year ice and shore-fast ice. The main emphasis of this work was to determine the microwave back-scatter cross-section of ice types to a range of frequencies between 4.6 and 17 GHz.

This study was in support of the Radar Satellite Program. Its purpose was to define the optimum radar parameters for identifying various ice types. Considerable ground truth data were collected for comparison with the remote sensing information.

P.C.S.P. support was also provided for:

- archaeological surveys of areas visited by the Franklin search expeditions;
- an archaeological survey at Rock River, Yukon;
- an excavation of a double winter house dating to the Thule stage on southeastern Banks Island;
- a study of sea birds in Hudson Strait;
- a final phase study of muskox behaviour;
- a study of the breeding biology of wading birds in east central Ellesmere Island;
- a survey to determine the number and distribution of Lesser Snow Geese nesting in the western Canadian Arctic;
- a collection and study of *Saxifraga oppositifolia*;
- a study on the population ecology and ecophysiology on two species of common Arctic vascular plants;
- a study of Silurian stratigraphy on Prince of Wales Island;
- visits to mining camps and mineral occurrences;
- a stratigraphic overview of Early Devonian reefs on Lowther Island;
- a study of modern analogues to interpret former permafrost environments on southern Banks Island;
- stream flow measurements in a basin near Resolute;
- a sampling program of modern lake sediments for pollen and macrofossil analysis in Tuk Peninsula;
- a high resolution radio echo sounding survey on Agassiz Ice Cap, Ellesmere Island;
- a lithofacies study of Silurian stratigraphy in the Baumann Fiord area, Ellesmere Island;
- an evaluation of Loran-C/Accufix systems for ship navigation in the Beaufort Sea;
- a month-long CTD profile recorded twice daily in Austin Channel;
- inspections of Land Use Operations in the high Arctic; and
- further testing of electrical resistance strain gauges in sea ice near Pond Inlet.

#### Plans for 1982-83

The 1982 Arctic field season will probably see more than 160 scientific parties in the field. All will be concentrating upon making their own contribution to scientific knowledge. Branch and departmental activity will be extensively directed to preparing for the Arctic Ocean geological/geophysical/oceanographic investigation scheduled for March-May 1983 and named CESAR'83 (Canadian Exploratory Survey of the Alpha Ridge).

#### Summary of Direct Northern Expenditures (000's)

	\$	%
<i>Total Forecast 1981/82</i>	13 217	100.0
<i>Expenditure by Northern Objective:</i>		
Economic Growth	9 286	70.3
Protection of the Environment	2 163	16.4
Sovereignty and Security	1 474	11.1
Administration	245	1.8
Social and Cultural Development	40	0.3
Quality of Life	9	0.1

# Department of the Environment

## Atmospheric Environment Service

### *Responsibilities*

The Atmospheric Environment Service (AES) is the federal agency that provides services and information relating to weather, climate, ice and air quality. The Service's activities contribute to the safety of Canadians and the security of their property. The services include historical, current and future information on weather, climate, sea state and ice conditions for all areas of Canada and contiguous waters. Specifically, through its observation and communication networks and Arctic forecast systems, AES receives and processes surface observations and upper air information throughout the year, conducts ice reconnaissance missions and provides consultation on, and forecasts of, atmospheric, ice and sea conditions.

The Service is involved in northern development and exploration through its participation in the federal Environmental Assessment and Review Process (EARP). Because concern for environmental quality has been increasing in recent years, the AES has become more involved with air quality. For example, it has helped to develop national objectives for the quality of the ambient air. It has also carried out research, provided information about the environmental aspects of acid rain and toxic chemicals and has participated in international air-quality negotiations.

### *Review of 1981-82*

Much of the construction of the Eureka — Alert communications link was accomplished in 1981. Construction work on Project Hurricane started again in March 1982. A Canada/Denmark satellite receiving station located at Sondrestrom Fjord became operational. Interim improvements were made to the computer system at the Canadian Meteorological Centre.

An evaluation of AES' ice and marine weather services was conducted during 1981, and a draft report has been prepared. Plans to improve aviation services in the Arctic were completed by AES and the Department of Transport (DOT).

Additional funding to support extended ice information services in the North, including iceberg forecasting and winter ice reconnaissance services was requested.

The Canadian Forecast System Review began in November 1981. AES is investigating a forecast system for the North, particularly a year-round Arctic marine forecast service. The objective is to recommend improvements and new services to support the general activities and special projects in the North.



A view of the AES Weather Station located at Eureka, N.W.T. on the shore of Slidre Fjord at 80°N. All buildings are covered with aluminum sheet siding. The land is snow-free for about 2 months. All the ice has left the fjord. The station is resupplied every 3 weeks.

### **Plans for 1982-83**

The Eureka — Alert communications link will be completed and in service by the fall of 1982. Subject to approval by the Treasury Board, improvements in aviation weather services and ice reconnaissance will be implemented and an iceberg surveillance service will be initiated. In 1982, senior management will be considering recommendations resulting from the evaluation study of ice and marine weather services and the Canadian Forecast System with a view to implementing them as soon as possible. Plans will be developed with the Department of Transport for improved services to Arctic marine transportation. A project will be carried out with the CBC's Northern Service to determine the feasibility of broadcasting an Arctic aviation weather presentation.

The Service will continue to improve its communications system. It will also be installing a new system at the Canadian Meteorological Centre for predicting the movement of oil spills. The computer system at the newly located Ice Central in Ottawa will be expanded, and a new "dynamic prediction model" delivered for testing. Planning for RADARSAT (a possible future satellite carrying radar equipment to observe ice) will continue.

A report entitled "The Long Range Transport of Air Pollutants" will be issued. AES will continue to provide consultation on and forecasting of weather, sea and ice conditions.

### **Administration Branch**

#### **Review of 1981-82**

During April 1981, AES carried out comprehensive health and safety inspections at the High Arctic Weather Stations. It also carried out on-site training sessions on health and safety. These sessions include training in the operation of fire fighting equipment. In September 1981, the sites were re-visited and inspected. The quality of drinking water was tested. All station facilities were surveyed for the presence of building materials containing asbestos. No hazardous materials were found.

### **Plans for 1982-83**

In 1982, ultra-violet water purification units will be installed at some stations. Safety inspection visits to all High Arctic Weather Stations are scheduled for May and September 1982. Inspection visits are also being planned to other isolated weather stations in the central and western Arctic. Renovation projects being completed this summer under contract will be inspected before they are accepted.

### **Atmospheric Research Directorate**

#### **Responsibilities**

The Atmospheric Research Directorate (ARD) advances the knowledge and understanding of the atmosphere and its interfaces with land, water and living things, both animal and vegetable.

### **Review of 1981-82**

Daily surface-based measurements of total atmospheric ozone continued at Resolute, N.W.T. using a Dobson ozone spectrophotometer. Once a week, a vertical ozone profile from the earth's surface to approximately 30 km altitude was obtained by using a Science Pump-ECC electrochemical balloon sonde.

The Canadian Arctic Air Pollution Program (CAAPP) of the Air Quality and Inter-Environmental Research Branch completed its third year of operation. The network stations at Alert, Mould Bay and Igloolik monitor aerosol samples for major ions such as sulphates and nitrates as well as for trace metals. Visible light scattering is also monitored by Integrating Nephelometers at Igloolik and Mould Bay. CAAPP is part of an international effort involving Canada, the United States, Norway, Denmark and Great Britain. Special studies of long-range transport of sulphur dioxide and sulphate to the Arctic were conducted in November 1981 and February 1982. Data from these studies give information on the size distribution of sulphate and trace metal particles, sulphur dioxide-to-sulphate ratios, and vertical profiles of Arctic haze. These studies will continue in a co-operative program with the University of Windsor.

Scientists in Meteorological Services Research Branch (MSRB) completed the Beaufort Sea Winter Ice Experiment. This was a joint industry-federal government research activity which resulted in the development of ice forecast models and the collection and processing of ice and meteorological and oceanographic data used to test the models. MSRB also acquired an ice database system and implemented the prototype ice forecast system in order to carry out an operational evaluation of the forecast models.

A simplified oil spills prediction system was delivered to most AES regional Weather Centres, and development work on a complete system was started. Work also began on the problems of forecasting the movement of oil spills in the presence of sea ice.

Procedures for predicting weather empirically were developed and tests were carried out at a few northern locations. A database system and a limited data set were developed for extending empirical weather predictions to Arctic marine locations.

### **Plans for 1982-83**

Air quality monitoring at Mould Bay, Alert and Igloolik will continue as the major CAAPP project. CAAPP will be reviewed at the end of 1982-83 to determine if the number of stations in the network should be changed.

The ice prediction models and associated systems will undergo an operational evaluation at Ice Forecast Central, and sensitivity tests and tuning of the models will be carried out in MSRB.

A comprehensive real-time system for predicting the paths of oil spills will be installed on AES computer facilities. A freezing spray prediction procedure will be adapted for Arctic marine applications.

### **Canadian Climate Centre**

#### **Responsibilities**

The CCC provides an effective climatic service directed toward developing the ability to understand and predict the inter-relationships between climate and man's activities.

The CCC is the lead agency for the Canadian Climate Program, a national program to co-ordinate climate-related activities in Canada.

#### **Review of 1981-82**

The effects of increasing levels of Carbon dioxide in the atmosphere on the Arctic climate was addressed through a project utilizing climatic analogs. This project involved choosing previous periods of climatic history that were markedly warmer or cooler than our current climate. These periods are looked at in relation to today's patterns to estimate Arctic conditions that might be expected if the amount of CO<sub>2</sub> in the atmosphere were to double by the mid-21st century. In connection with this project, the literature review of Arctic climate variation/change continued.

A climatology of cyclonic and anticyclonic centre movements in the Canadian Arctic and eastern coastal zones was begun. Trajectories and percentage frequencies of occurrence were among the elements being considered. To date, the study has been restricted to the months of January and July during the period 1957-78.

Work on Regional climatologies continued as CCC worked to complete the Yukon Climatology begun at the Whitehorse Weather Office. This work will complement that done on the previous regional climatologies on the Mackenzie Valley—Beaufort Sea and the Canadian Arctic Islands and adjacent waters. With respect to the latter, extensive typesetting and drafting was done on Volume 2, which will be published in 1982.

Offshore climatologies continued to be a key area of interest. The Centre acquired data bases composed of ship observations and of spectral wave data covering all Canadian waters. Software to enable climatological statistics to be generated from these data for user-specified areas and time periods was being developed. Duration statistics for winds and waves in the Lancaster Sound-Northwestern Baffin Bay area were prepared.

The program of acquiring meteorological data collected at summer field camps supported by the Polar Continental Shelf Project continued. A data base covering the 1972-80 period is now available for study.

As it has in previous years, the Centre devoted a significant amount of time to evaluating various documents submitted under the Environmental Assessment and Review Process (EARP).

#### **Plans for 1982-83**

The Centre will finalize the report on the carbon dioxide study and will prepare plans to carry out further work. The literature review of Arctic climate variation/change will be completed. A draft version of the "Climate of the Yukon" will be prepared.

The cyclone/anticyclone climatology project will continue by testing the usefulness of an alternative objective data set for generating the desired statistics.

An assessment of the usefulness of the summer field camp data from the Canadian Arctic Islands and comparison of them with existing AES network data and other offshore observations will be made.

The software for analyzing offshore climate statistics will be used to prepare a set of basic weather contingency tables for Arctic waters. Work on testing synthetic offshore data sets will continue. This work will draw on the results of the Lancaster Sound-Northwestern Baffin Bay study. The Centre will be working on a project, in conjunction with AES Western Region, to update existing climatologies for the Beaufort Sea area. A survey of available offshore data will be carried out with a view to developing a catalog of this information.

#### **Central Services Directorate**

##### **Responsibilities**

Through its Ice Branch, the Central Services Directorate (CSD) provides ice information to support transport and resource exploration needs in the Arctic. It also provides computing services and technical and professional training, maintains data acquisition networks and provides expertise for developing and using atmospheric instruments and systems.

##### **Review of 1981-82**

The Directorate finished installing the ADRES systems at all Upper Air Stations. New hydrogen generators (7-cell electrolyzers) were ordered. Two FGGE-type Hermes drifting buoys were deployed in July 1981 in Hudson Bay. Both performed well and produced useful information for areas in which data were sparse. The Data Acquisition Services Branch procured an Automatic Picture Transmission (APT) satellite receiver for Whitehorse.

The Training Branch provided formal weather observing courses for staff assigned to the DEW Line and AES Weather Stations in the Arctic. Courses were held at training centres in Cornwall, Ontario and Colorado Springs. The Branch worked with the N.W.T. Government training staff during the year on training Observer-Communications for the Community Airports Program.

The Ice Branch provided somewhat more ice information services than it had in previous years. In October 1981, a "ground-truthing" experiment relating to the microwave signatures of ice was successfully completed at Mould Bay by AES' Ice Research Division. Scientists from NASA, the University of Kansas and the Jet Propulsion Laboratory and two Inuit from Pont Inlet assisted. Many of the activities of the project were filmed.

The flight testing of an improved laser profilometer was conducted in southern Canada during the summer of 1981. Its operational use in early 1982 in the Arctic was not particularly successful; several problems remain to be solved. Implementation of the new WMO International ice symbology was deferred because of pressure from marine operators; it will be introduced in early summer of 1982. Appropriate numerical spot codes have been developed for ice reports from icebreakers and other offshore Data Collection Platforms (DCP's).

Because ice cleared early in the Labrador Sea — Hudson Bay areas in 1981, increased winter flying was undertaken in the Arctic to gather more baseline data. Rather than carrying out a single series of flights in February, the Branch conducted monthly probes in January, February and March 1982.

#### **Plans for 1982-83**

A second Mould Bay experiment (under melting conditions) is planned for mid-June 1982, and attempts are being made to develop a permanent research facility at that location which could be used by other government departments.

The Directorate is working on a new aircraft charter contract for aerial ice reconnaissance and has submitted proposals for a major expansion of the program into icebergs and year-round Arctic ice reconnaissance.

Training support services for all weather-observing programs in the North will be provided at the same level as they were in 1981.

The drifting buoy program in Hudson Bay will be repeated. Additional APT receivers will be procured for installation in Frobisher Bay, Resolute, Yellowknife and Inuvik, N.W.T. New Hydrogen generators and safety systems will be installed at several stations. Work will continue on developing and evaluating the next generation of automatic weather stations capable of operating in the Arctic under the most severe winter conditions. The Directorate will manage a contract to design an anemometer suitable for use in the Arctic.

#### *Field Services Directorate*

##### **Responsibilities**

The Field Services Directorate (FSD) provides up-to-date information, forecasts and warnings to most of the larger northern communities. The Directorate operates five data-gathering networks, a rapid communications system, contract stations, the Canadian Meteorological Centre, the Yukon Weather Office, and the Arctic Weather Centre (responsible for issuing weather forecasts and warnings), weather service offices, satellite read-out stations, and scientific support offices.

##### **Review of 1981-82**

Meteorological information, forecasts and consultation services were provided for a variety of programs and activities in the North. The Arctic Weather Centre in Edmonton, the Yukon Weather Office in Whitehorse and the Weather Offices at Yellowknife, Inuvik, Resolute and Frobisher Bay continued to provide weather services for northern residents and those involved in air and marine transportation. A technician assigned to the Fire Control Centre in Fort Smith and a meteorologist in Whitehorse provided fire-related weather services. The Beaufort Weather and Ice Office provided on-site specialized consultation and services involving forecasts of weather, ice and sea conditions. These services were provided to Dome, Esso and Gulf and were related to their oil and gas exploration activities in the Beaufort Sea.

An APT satellite receiving station was installed at Whitehorse in March 1982. The station provides cloud imagery to the Yukon Weather Office to help meteorologists to analyze and forecast weather in that region. A Hewlett-Packard computing system was installed in the Whitehorse Weather Office, and renovations to the office were completed.

AES staff from the Frobisher Bay Weather Office broadcast a daily public weather forecast prepared by the Quebec Weather Centre. The Forecast was transmitted over the Radio-Canada network to residents in the northern portion of Quebec. The Service also inaugurated aviation weather services provided by staff at the Frobisher Bay Weather Office in support of regular flights (3 per week) by First Air and Groenlandair between Frobisher Bay and Godthaab, Greenland.

An AES Upper Air Meteorological Technician, holding a radiosonde balloon and the instrument package, on the point of releasing the balloon to carry the radiosonde aloft, measuring humidity and temperature, and providing by means of radar tracking - winds.



The technological highlight of the year in the eastern Arctic was a major improvement in communications. It involved installing an antenna to allow two-way communications via the ANIK-B satellite between the Frobisher Bay Weather Office and the Canadian Meteorological Centre (CMC) in Dorval and the Ice Forecasting Centre in Ottawa. Between May and September 1982, the Frobisher Bay Weather Office will be able to receive facsimile weather charts from the CMC, and to transmit ice information obtained from airborne ice reconnaissance teams to the Ice Forecasting Centre, as required.

Meteorological data were acquired from 49 synoptic stations and six automatic stations. Data were also provided from 14 aerological stations. In order to increase the height attained by radiosondes, special upper air balloons were supplied to aerological stations in the winter of 1981-82 in the North. An additional 93 climatological stations provided extreme daily temperatures, precipitation and other weather information.

Reports were obtained from seven ships during the navigation season. Three more Arctic Aviation Weather Reporting Stations (AAWRS) were commissioned in 1981 at Broughton Island, Sachs Harbour and Fort Good Hope, N.W.T. There are now 22 AAWRS operating in the Yukon and Northwest Territories — 7 in the eastern Arctic, 9 in the western Arctic, and 6 in the central Arctic. Contracts to operate the meteorological programs and AAWRS were re-negotiated with the local Inuit co-operatives at Pond Inlet and Cape Dorset for two-year periods. AES carried out a routine equipment inspection program and trained Inuit meteorological observers on-site. Two Private Aviation Weather Reporting Stations (PAWRS) are now operating at Nanisivik and Rae Point.

In June 1981, an automatic weather station was commissioned at Lupin, N.W.T., at the site of a gold mine operated by Echo Bay Mines. A new contract with Echo Bay Mines was negotiated for a manned, partial weather observing program at Lupin, after the weather observing contract that the Department of Transport had with Pacific Western Airlines at Contwoyto Lake was terminated in March of 1982.

Meteorological data transmitted from Data Collection Platforms (DCP's) via NOAA polar orbiting satellites were decoded by the Satellite Facility in Edmonton. Drifting DCP's located in the Arctic Ocean, Hudson Bay and the Labrador Sea provided atmospheric pressure data which were transmitted to AES communications circuits. In addition, data from fixed platforms located in Greenland were decoded for use in the Arctic Weather Centre. Western Region participated with DND and the Polar Science Centre in Seattle in the deployment of a DCP in the southern Beaufort Sea. Together with NOAA and various research and operational groups, Western Region is planning an ongoing DCP program for the Arctic Basin.

On April 1, 1981 the weather-observing programs at Eureka and Mould Bay were up-graded to provide 24 hourly reports each day, including special reports between 1100 Z<sup>1</sup> and 2100 Z<sup>1</sup>.

The Gill low-pressure hydrogen generators have now been phased out. Two new power generators were installed at Eureka in 1981. They are equipped with a heat recovery system that provides heat to the main garage, sleeping quarters and the operations building. A salt water de-salination plant was also installed to process about 2 500 gallons of water per day. An environmentally-controlled ADRES computer office was constructed at Resolute in January 1982. A new satellite communications facility is under construction in Northern Ellesmere Island.

The Department of Transport and AES have requested funds to provide additional facilities and services identified in the Arctic Aviation Weather Service Requirements Study.

Project CENTAUR, a joint scientific study of the upper atmosphere involving scientific agencies in Canada and the United States was carried out in the winter of 1981-82 in the western High Arctic. AES provided support facilities and lodging, as well as weather information and forecasts for this project.

Western Region's Scientific Services, Data Acquisition and Forecast Operations Divisions supported the Baffin Island Oil Spill experiments at Cape Hatt during the summer of 1981.

Regional Scientific Services Divisions, staffed with meteorologists specializing in applied meteorology, provided consultative services (e.g., advice to a contractor constructing a snow road on Melville Island). It carried out applied research (e.g., trajectory analysis for LRTAP) and, through the Regional Screening and Co-ordinating Committee, assessed the environmental effects of new developments (e.g., the Borealis Mine).

Services included co-ordinating pool housing for approximately 70 employees, providing advice and guidance to employees relocating, procuring goods for northern shipments, maintaining major AES facilities, co-ordinating safety programs, maintaining financial systems for costing special services and collecting revenue.

The Canadian Meteorological Centre supported weather service to the North with a wide range of meteorological charts and messages. It depicted main weather systems on a hemispheric/continental scale as far as five days in advance. It also predicted various weather elements for use by the Arctic Weather Centre and other forecast offices in providing information of interest to air and marine transportation activities and the general public. A selection of 12-15 charts sent daily to offices at Frobisher Bay and Resolute by ANIK satellite was available directly to ships operating in Arctic waters.

Sea-ice prediction for Arctic navigation and oil exploration was given additional support through 15-day mean wind forecasts for use by the Ice Forecasting Centre in Ottawa. Provision was made in 1981 for on-request 48-hour forecasts of surface weather, pressure, wind, temperature and cloud cover for all reporting stations and pre-selected locations in the Arctic Basin and Hudson Bay.

<sup>1</sup>Z = Greenwich Mean Time

### **Plans for 1982-83**

In the summer of 1982, a power-house will be constructed at Mould Bay and the three power plants will be connected to a heat recovery system linking the sleeping quarters, main garage, operations building, and food warehouse. Environmentally-controlled ADRES computer offices will be constructed at Hall Beach, Eureka, Baker Lake and Mould Bay in 1982.

The aerological station at Norman Wells was to have been re-located and re-constructed in 1981-82. However, the Government of the N.W.T. included the proposed site in plans for the Town's expansion. Negotiations with the Government resulted in the selection of another site. Accordingly, the new aerological facility will be built in 1982-83.

Approval was received to construct a new facility for inflating hydrogen balloons at the Upper Air Station at Sachs Harbour on Banks Island, and construction is scheduled to begin in 1982. Three new AAWRS will be installed and commissioned in 1982-83 in the western Arctic.

The AES Weather Station at Pond Inlet will be re-located at the airport in 1982 because the land it now occupies is needed for housing. Quebec Region is continuing to monitor DOT plans for a new air terminal building in Frobisher Bay scheduled for construction in 1984-85, with the intention of moving the Weather Office to the new facility.

It is anticipated that the future status of Fort Reliance will be resolved in 1982. Project CENTAUR will enter its final phase in the winter of 1982-83.

Western Region intends to review the Arctic, Public, Marine and Aviation Weather Services Programs, with particular emphasis on the usefulness and distribution of weather information. The Region's Scientific Services Division will issue a report on the 1981 Baffin Island Oil Spill experiments, and will begin to review environmental impact statements (EIS) relating to Beaufort Sea development.

In 1982, the CMC will increase the number of northern stations from 8 to 25, for which maximum-minimum temperature forecasts are routinely provided to the fifth day. Experiments are to be started in 1982 to use satellite imagery in digital form as the basis for more accurate analysis procedures. A new-generation vector computer planned for late 1983 will result in more reliable data on which to base weather forecasts.

FSD will continue to provide up-to-date weather information, forecasts and warnings, scientific consultation on Arctic projects and climatological information for northern activities. Instruments, networks and communications systems will be inspected and maintained regularly. Special support programs for offshore activities will be provided.

### *Scientific Programs Co-ordinator*

#### **Review of 1981-82**

The Scientific Programs Coordination office was involved with the review of the Beaufort Sea EIS Guidelines, the formulation of the initial meteorological input to the Indian and Northern Affairs Canada (INAC) Northern Hydrocarbon Paper and the DOE Northern Policy Paper, and the review of the annual Beaufort Sea drilling operations. In addition, the office was active in discussions of northern issues with INAC, and helped to develop programs with several agencies leading to the funding of northern-related research and operations in AES.

#### **Plans for 1982-83**

Projects include reviewing the draft Green Paper on Lancaster Sound and the Beaufort Sea Hydrocarbon Development EIS. The office will continue to be involved in discussions with INAC on developments in the North and in the analysis of the results of the study of northern hydrocarbon transportation options.

### **Environmental Protection Service**

#### **Responsibilities**

EPS ensures that the federal government's environmental protection regulations are enforced. The Service is concerned with controlling air and water pollution, managing the disposal of waste, assessing and controlling the environmental impact of pollutants and handling environmental emergencies. This Service provides the departmental liaison with industry and provincial environmental protection agencies. In the North, the Service operates through district offices in Whitehorse and Yellowknife.

#### *Air Pollution Control Directorate*

#### **Responsibilities**

Under the terms of the Clean Air Act, the Directorate monitors and controls air pollution in the two territories.

#### **Review 1981-82**

In the Yukon Territory, analysis for carbon monoxide and oxides of nitrogen continued on a seasonal basis. Levels of carbon dioxide exceeded maximum desirable levels on several days of extreme cold at the Whitehorse NAPS station.

Monitoring of stocks of unleaded gasoline for compliance with the Lead Free Gasoline Regulations was carried out at Yukon retail outlets. No severe cases of lead contamination were noted.

An air-sampling program in Riverdale, a Whitehorse suburb, continued. Here, many homes burn wood as an auxiliary or primary fuel. The air-sampling program is carried out to measure the amount of solid (particulate) matter and unburned hydrocarbons released into the air from wood-burning stoves and furnaces. Preliminary results indicate that under certain meteorological conditions, particulates will exceed 100 micrograms per cubic meter, approaching maximum desirable levels. Concentrations of polyaromatic hydrocarbons (PAH) are also high, indicating that unrestricted use of wood for fuel may lead to a substantial reduction in air quality.

Test and Tune, a vehicle emissions testing program, developed by APCD, was conducted in Whitehorse during the months of June, July, August and September 1981. It was a joint program of EPS, EMR and the Government of Yukon. Approximately 25 per cent of the vehicles in Whitehorse were tested. Results from this program should be released by mid-1982.

In the N.W.T., one NAPS and two high volume stations operated continuously in Yellowknife. Thirteen dustfall sampling stations for arsenic operated as recommended by the Canadian Public Health Association Task Force. Compared to the 1975 data, there has been a 60 per cent reduction in the quantity of arsenic emitted from mining operations in the Yellowknife area. The Service completed a "Fugitive Emission" survey of arsenic storage ponds at Con Mine and the report should be available by April 1982. It also started a program to monitor the ambient air quality at Norman Wells. This program will continue for the next two years in response to the Norman Wells expansion.

Stack sampling at Giant Yellowknife Mine was carried out. Tests indicated that the mine was complying with proposed new regulations for arsenic gold roasting under the Clean Air Act.

A report entitled "Arsenic Levels Around Yellowknife, N.W.T. since 1978" was completed.

Monitoring of unleaded fuel for lead contamination was carried out in Yellowknife and Hay River.

#### ***Plans for 1982-83***

The Service hopes to install a fine particulates sampler in Whitehorse in conjunction with the NAPS instruments, to measure hydrocarbon concentrations.

In addition, analysis of the 1981-82 Riverdale woodsmoke sampling will be completed and the results will be released to the public.

The NAPS and dustfall sampling stations will continue to operate in Yellowknife, as will the ambient air quality monitoring program at Norman Wells.

Stack sampling for compliance with arsenic gold roasting regulations will again be conducted at Giant Mine as well as sulfur dioxide emissions as requested by the N.W.T. Science Advisory Board.

The Service will assess Con Mine's Arsenic Trioxide plant to determine the extent to which it meets the requirements of the Clean Air Act. Assessments of air emissions and controls of any new mines in the N.W.T. will be carried out if required. Sampling for leaded and unleaded gasoline will again be conducted in both Territories.

### **Water Pollution Control Directorate**

#### ***Responsibilities***

Water Pollution Control, with the Department of Indian Affairs and Northern Development and the two Territorial water boards, is responsible for developing and implementing adequate water pollution control programs in the North, particularly for the mining and petroleum industries. EPS implements the provisions of the Ocean Dumping Control Act, and other water pollution abatement programs under the authority of Sect. 33 of the Fisheries Act. It stimulates the development and application of water pollution control techniques as they relate to the North.

#### ***Review 1981-82***

EPS Yukon continued to work closely with DIAND staff on Yukon Territory Water Board matters, especially the application for an amendment to the licence for Cyprus Anvil Mining Corporation's new tailings facility. Representatives of EPS attended Municipal Technical Committee meetings to help draft standards for effluents from Yukon municipalities and to monitor effluent quality.

EPS Yukon completed studies for publication, on Whitehorse municipal effluents and water quality in the Yukon River. It developed benthic invertebrate monitoring programs to be included as conditions of water licences, and conducted pre-development environmental assessment studies at LaForma, Silver Tusk, Marbaco, Tom, Jason and Jona Silver mining properties.

EPS Yukon also carried out studies of the environmental impact of mineral exploration and mine abandonment. It also provided technical assistance to a multi-disciplinary interdepartmental study team assessing the impact of placer mining on the environment. As part of the study team, EPS helped to prepare a joint DOE/DFO position paper on placer mining. The paper was forwarded to DIAND in order to help that Department develop a new management regime.

Finally, EPS Yukon participated in the Yukon River Basin Study planning program and served on the Water Quality Working Group.

In Yellowknife, EPS initiated a comparative sampling program in order to establish standard methods of sampling under the Ocean Dumping Control Act. The Regional Ocean Dumping Advisory Committee met several times, consulted with members of the community and subsequently issued five ocean-dumping permits.

A biological and chemical survey in Yellowknife Bay was carried out. Its purpose was to provide a statistical basis for assessing the effectiveness of the new effluent treatment plant at Giant Yellowknife Mine. Preliminary biological and chemical surveys were carried out at the Cadillac and Lupin mines. These surveys were part of a co-operative program with the mines and DIAND to establish a baseline for future impact studies. Sampling of sediments and water was carried out at Colville Lake in response to a reported use of Lindane pesticide in the watershed of the community water supply. Sampling of well water in Enterprise was carried out in response to complaints of fuel tainting.

Five investigations under the Fisheries Act were conducted during the year. Although no prosecutions have resulted, discussions are continuing concerning potential enforcement actions on two of the cases.

Several Departmental briefs were presented at N.W.T. Water Board hearings for water licences for industrial and municipal uses. EPS helped to develop the conditions for 14 water licences granted during the year. EPS also chaired a working group that produced a set of guidelines covering effluents from municipalities.

#### **Plans for 82-83**

EPS will continue to provide technical advice and assistance to the Territorial Governments, with the emphasis on applying appropriate wastewater technologies. Advisory and contract management services for controlling water pollution control and setting sanitation standards for work camps as well as permanent facilities, will be offered to the operating departments in the North. Further support will be given to the Department's role in the North by providing environmental engineering solutions to problems arising from northern resource extraction and development activities.

EPS Yukon will begin field and laboratory studies on the acid-generating potential of high-sulphide mine tailings from five Yukon mines. It will also begin to study the toxicity and bacterial quality of five municipal sewage lagoons. Additional fieldwork will include a reconnaissance study of groundwater near abandoned waste disposal sites as well as pre-development assessment studies at proposed Yukon mine sites.

The office will continue to advise DIAND on placer mining and will conduct biological and water quality monitoring on some Yukon placer streams. It will also continue to participate in the Yukon River Basin Study.

In the N.W.T., EPS studies at two abandoned uranium mines are planned to determine the levels of radionuclides in water, sediments and fish. Work will continue at Cadillac Mine to provide a data base that will enable the effects of the mine to be assessed in future. Further sampling will be conducted in Yellowknife Bay to assess the need for future controls on the Con and Giant mines. Samples will be collected from Gordon Lake and Camlaren Mine to check for changes in baseline conditions measured in 1980. Further studies will be conducted at Lupin Mine and sampling will begin at Cullaton Lake Gold Mine and Salmita Mine to acquire a data base for assessing how the effluents from these mines will affect the environment.

A study to characterize and assess the extent of hydrocarbon contamination in McKinley Bay will be conducted. A survey of the area affected by the Edgar Jourdain fuel spill will be carried out to determine where contamination is most serious. Monitoring of shorebase facilities in Tuk Harbour, Tuff Point, McKinley Bay and Hutchison Bay will be started to assess the effectiveness of regulatory controls on these facilities.

Funding from the Ocean Dumping Research Fund will allow an investigation of foam block incineration. DIAND, Panarctic and CIL will participate in the study, with EPS playing a co-ordinative role. Sampling to determine the existing levels of contaminants in sediments along the Tuktoyaktuk Peninsula will be conducted.

EPS will continue to administer the Ocean Dumping Control Act and to co-ordinate the Regional Ocean Dumping Advisory Committee. Through membership on the Technical Advisory Committee to the N.W.T. Water Board, it will also provide technical advice on licences issued under the Northern Inland Waters Act.

## **Federal Activities**

### **Responsibilities**

The Environmental Protection Service ensures that sources of pollution at federal facilities are cleaned up and that new projects are environmentally acceptable. Pollution problems are identified and assessed and clean-ups developed in consultation with other federal departments. The annual clean-up program continues to record and evaluate pollution problems generated by federal departments. Environmental effects of new projects are assessed through a screening process.

In addition to carrying out work to minimize pollution at federal facilities, the Federal Activities Assessment Program advises on the environmental effects of activities falling under federal jurisdiction. It provides specific advice as well as indirect advice through guidelines and codes of good practice. In addition, EPS co-ordinates interdisciplinary reviews to assess the effects of federal activities on the environment. These reviews enable EPS to provide advice and assistance and recommend appropriate courses of action for governments, senior management and industry. The Program also implements the EPS role in the policy statement "DOE Role in EARP".<sup>1</sup>

### **Review 1981-82**

EPS Yukon published guidelines covering the disposal of drilling mud fluids in non-permafrost areas and sent them to holders of Yukon oil and gas lands permits. EPS offices in the Territories continued to participate in the Land Use Advisory Committee of DIAND in support of the Territorial Lands Act. It provided support to DOE representation on the Regional Environmental Environmental Review Committee recently set up by DIAND and participated in the DOE response to the Beaufort Sea EARP Reviews.

The Northwest Territories office participated in the Arctic Waters Advisory Committee (AWAC) review of environmental operating conditions for Beaufort Sea exploration. It also inspected operations in that area and carried out a sampling program for monitoring purposes at McKinley Bay.

EPS prepared a development forecast of major industrial projects planned for the N.W.T. A Paper was prepared jointly with the N.W.T. Wildlife Service dealing with the effects of development on the Nahanni watershed and the need for land use planning.

A sub-district office was opened during the summer months in Frobisher Bay. Most of the work carried out there was directed toward developing an "inventory" of PCB contaminants in northern waters and line inspections in the eastern Arctic.

<sup>1</sup>Environmental Assessment and Review Panel.

### **Plans for 1982-83**

EPS Headquarters will continue to examine development activities such as the Beaufort Sea and offshore Atlantic exploration efforts to determine how these developments affect the environment. Headquarters will also co-ordinate EPSHQ reviews of IEE's and environmental impact statements (EIS) and provide technical comment to the EPS regional review team for northern projects referred to the Federal Environmental Assessment and Review office (FEARO).

EPS will develop methods of controlling the adverse environmental effects of offshore oil and gas activities in the North. It will also develop techniques for controlling soil erosion around pipelines and roads constructed in permafrost.

EPS headquarters will represent and support EPS/DOE on interdepartmental committees that deal with assessing environmental impacts of development.

The "Offshore Situation Report" will be maintained as an information service on activities in the Beaufort Sea, Davis Strait and the Labrador Sea.

Both northern offices will be very much involved in the DOE Review of the Beaufort Sea EIS (Environmental Impact Statement) and will continue to participate on committees reviewing federally initiated projects to support the departmental policy statement "DOE Role in EARP". A forecast of major resource/industrial developments in the N.W.T. will be prepared.

EPS Yukon will review submissions by Foothills Pipelines Ltd. to the EARP Panel for the Alaska Pipeline and plans for a new Airport at Whitehorse.

A permanent EPS sub-district office will be established in Frobisher Bay to provide service to the eastern Arctic and a seasonal sub-district office will be established in Tuktoyaktuk to provide service to the Beaufort Sea area.

### **Waste Management**

#### **Responsibilities**

EPS ensures that federal government activities incorporate adequate waste management procedures. New techniques for managing waste are being developed and information on them is being distributed.

#### **Review 1981-82**

EPS Yukon continued its discussions with the Yukon Government on the need for quasi-provincial policies and legislation.

A groundwater study of the War Eagle municipal landfill site was initiated after EPS had sampled surface waters in the vicinity. The study's purpose was to determine if the site could continue to be used for waste disposal.

Waste handling facilities at DEW Line Sites in the eastern Arctic were inspected to assess the USAF DEW Line Environmental Clean-up project. A contract was awarded to a private company to carry out a study on waste management for the N.W.T. Government.

### **Plans for 1982-83**

EPS Yukon will sample several old waste disposal sites to test for the presence of persistent contaminants such as DDT and PCB's.

The Yukon office will continue to attend meetings of the Solid Waste Committee of the Land Use Advisory Committee, and assist in the inventory, inspection and assessment of Yukon waste disposal sites.

Industry's ability to manage its solid waste in the Beaufort Sea area will be assessed by the EPS-N.W.T. office. As well, the office will compile an inventory of abandoned waste facilities, to determine where potential hazards exist.

### **Contaminants Control**

#### **Review 1981-82**

EPS Yukon chaired an intergovernmental advisory committee on pesticide programs in the Yukon and also provided technical advice to the Territorial Government on its draft pesticide legislation.

The EPS office in the Northwest Territories conducted PCB<sup>1</sup> inspections at eastern Arctic DEW Line stations, electrical transformers at the Frobisher Bay dump and the Cadillac Mine PCB spill.

#### **Plans for 1982-83**

In addition to overseeing pesticide management in the Yukon, the use and abandonment of PCB electrical equipment containing PCB at gold dredging sites in the Klondike will be surveyed by sampling soils and sediments in these areas. The past and present use of mercury in placer mining in the Yukon will also be surveyed.

EPS — N.W.T. will continue to develop an inventory of equipment containing PCB's. Advice will be distributed to those who use this equipment on its disposal.

### **Environmental Emergencies**

#### **Review 1981-82**

EPS Yukon received a total of 26 Pollution Reports, most of which involved petroleum products leaking either from storage tanks or during transportation. Commercial bulk petroleum storage and distribution facilities throughout the Yukon were inspected in co-operation with the Fire Marshall's office. The inspection found deficiencies in storage tanks and equipment and in operational procedures at these sites. Recommendations were made for upgrading the bulk plants to comply with both the YTG, Gasoline Handling Ordinance and sound environmental practices.

The Yukon Disaster Committee Contingency Plan to Deal With Oil and Hazardous Chemical Spills underwent major revisions this year. Draft contingency plans submitted by Foothills and Northern Canada Power Commission were also reviewed:

Plans were made to present a Yukon Environmental Emergency Response Course for the benefit of other government departments (federal and territorial) participating in the reporting, surveillance and monitoring system currently established in the Yukon.

Both offices actively participated in the Baffin Island Oil Spills Program at Cape Hatt this year and continued their participation in the Arctic Marine Oil Spills Program.

<sup>1</sup>Polychlorinated biphenyls.

In the N.W.T., a total of 95 spills were reported. Major spills investigated were at Camp Farewell in the MacKenzie Delta, Cadillac Mine, Hall Beach (Edgar Jourdain), Tuktoyaktuk Harbour, Camlaren Mine, Hay River Harbour and Yellowknife. The Edgar Jourdain spill at Hall Beach was given the highest priority. Further inspections of fuel handling facilities in Hay River Harbour were carried out, and a sediment sampling program in Hay River was completed for detecting hydrocarbons.

A review of a draft of "Northern Dyking Guidelines" was initiated with other agencies.

#### **Plans for 1982-83**

EPS will sponsor the Yukon Environmental Response Course early in the year and the bulk plant inspections carried out last year will be followed up in 1982-83 to determine if bulk plants have responded to the recommendations made by EPS.

A study on the suitability of existing community waste disposal sites for accepting debris from oil spills will be initiated in the Yukon. EPS will continue responding to reports of spills.

Contingency planning will remain a high priority with EPS Yukon with plans to review several industry plans and updates to the Yukon Development Corporation plan.

In the Northwest Territories, EPS is prepared to respond to major environmental emergencies. An EPS response kit is being prepared to enable the collection of legal samples, the monitoring of spills and the detection of hazardous materials.

Northern dyking guidelines will be completed in collaboration with the Territorial Government.

#### **Inland Waters Directorate**

##### **National Hydrology Research Institute**

The National Hydrology Research Institute, established in Ottawa April 1, 1979, carries out scientific studies of surface water, ground water, and snow and ice. These studies include both process and applied research as well as modification and development of instrumentation and technology for laboratory and field analysis.

#### **Ground Water Division**

##### **Responsibilities**

The Ground Water Division's research programs emphasize the development of techniques for assessing ground water resources. The effects of environmental disturbances on ground water are also studied.

##### **Review 1981-82**

The Division prepared a report entitled "Management of Ground Water Discharge for the Solution of Icing Problems in the Yukon". It was presented at the Fourth Canadian Permafrost Conference and will be published in the proceedings of the conference, The R.J.E. Brown Memorial Volume. The Report describes observations during the 1979-80 winter at an icing site at km 1817.5 on the Alaska Highway and suggests methods of alleviating problems at this and similar sites.

Analyses for oxygen and sulfur isotopes were carried out on a number of rock and water samples collected during the period 1975 to 1978 in the Central Mackenzie Valley.

The report on "Frost blisters of the Bear Rock spring area near Fort Norman, N.W.T." was completed and submitted for publication in Arctic.

In March 1981, samples of spring water, icing ice and average snowpack were collected at four instrumented icing sites along the Alaska Highway; ice-level markers were installed at the icing site at km 1817.5. Samples of spring water and average snowpack were also collected at Takhini Hot Spring and at a frost-blister site in the North Fork Pass.

In July 1981, the eight time-lapse cameras installed along the Alaska Highway were retrieved and their exposed films processed; at km 1817.5 the ice-level markers were surveyed and several tree samples were collected for dendromorphology study to try to "date" the icing sites. Water samples were collected at the icing sites and from Takhini and Liard Hot Springs.

Early in November 1981, a "filling-time counter" and a maximum reading thermometer were installed at the Takhini Hot Spring to monitor the discharge rate and temperature of the spring water.

The hydrochemical sampling program in the Pine Point area and at the open pits has been completed. Data are being analysed.

Observations of discharge and hydrochemical sampling at the three gauging stations is continuing. Data are being analysed.

In recent years the question of ground water flow in high polar latitudes became a matter of concern in relation to disposing of tailings from two new lead-zinc mines in the Arctic: Polaris Mine on Little Cornwallis Island and Nanisivik Mines on Northern Baffin Island. Results of field investigations lead to the conclusion that, at both mine sites, ground water is flowing toward the lakes selected for tailing disposal.

##### **Plans for 1982-83**

Analysis and interpretation of field results and time-lapse photography taken during 1979-80 and 1980-81 winters at icing sites along the Alaska Highway will continue. Reports will be prepared on studies of icings, frost blisters and geochemistry of springs. A liquid-pressure sensor suitable for use in subsurface environments subject to freezing will be developed. Investigations at spring sites will continue. Field results from the Pine Point area will be analysed and interpreted and various reports prepared.

## Surface Water Division

### *Responsibilities*

In northern areas, the Surface Water Division conducts basic and applied research in the field of permafrost hydrology. It provides consultative services on northern water problems and carries out specific water-related studies both in support of the Inland Waters Directorate mandate and for other government agencies.

### *Review 1981-82*

Summary reports were completed on a three-year study of the Liard River Basin spring flood, conducted for the Mackenzie River Basin Committee. Investigations focused on (1) river ice break-up and jamming on the Fort Nelson and lower Liard Rivers, (2) suspended sediment transport of the Muska, Fort Nelson and Liard Rivers, and (3) thermal mixing of the Liard River and several of its major tributaries. A report was also completed on ice-conditions of the lower Mackenzie River and Mackenzie Delta, based upon break-up and freeze-up observations obtained in 1980. Reports are to be published by the Mackenzie River Basin Committee by the end of the 1981-82 fiscal year.

In the Mackenzie Delta, the Division surveyed the pre-break-up ice thickness. On the lower Mackenzie and in the Mackenzie Delta, observations of ice break-up were made to augment the existing data base and to continue the Mackenzie ice study.

An investigation of the water level of a variety of lakes in the Mackenzie Delta continued in 1981. Time-lapse photography of water levels at three sites within one study area was obtained from spring break-up (late April) until just before freeze-up (September). A second study area was established where time-lapse photography will begin in 1982. The purpose is to provide baseline information for the assessment of the potential impact of increased flow regulation that will result if dams are constructed on the Liard River.

East of the Mackenzie Delta, data were collected at three basin sites in the taiga zone south of Inuvik and at seven basin sites in the tundra zone between Inuvik and Tuktoyaktuk. Surveys of ice accumulation in culverts, river icings, late winter snowpack water equivalent, discharge and meteorological elements were made at appropriate locations in the basins. A report on the 1980 field season is being finalized for presentation to the Northern Roads Environmental Working Group, DIAND.

A 150-page report has been prepared on the interaction between permafrost and river flow at both High and Low Arctic research sites. Ground temperature observations to a depth of 13 metres beneath river channels are presented as isotherms on river valley cross sections for each season. In addition, recordings of riverbed temperatures over three years have been analyzed and found to display certain physical phenomena relevant to oil and gas pipeline construction across intermittent streams in permafrost zones.

### *Plans for 1982-83*

Highway-related hydrologic studies east of the Mackenzie Delta will continue in order to extend the data base. The Delta lake program will emphasize time-lapse photo observation of water levels. Meteorological data collection and hydrochemical analysis will also be undertaken, and further expansion of the number of test sites is contemplated for the year.

The timing of, and, processes involved in, freeze-up and break-up of Mackenzie Delta channels and the Mackenzie River below Fort Simpson will again be examined by means of aerial photography, by ice thickness, and water temperature measurements and by other pertinent observations taken during the field season. More thorough investigations of the occurrence, causes, characteristics and consequences of ice jams on the Mackenzie River are planned.

A study will be undertaken to determine the level and extent of historic flood events and river ice levels at Fort Simpson, Fort Norman, Fort Good Hope, Fort McPherson and Aklavik, N.W.T., in order to help define flood risk zones at those communities.

Research on hydrothermal effects near and under Arctic streams will be nearing completion when papers dealing with the Inuvik and Melville Island areas are published. Analysis will continue on the simulation of hydrothermal patterns under arctic stream beds.

## Snow and Ice Division

### *Responsibilities*

The Snow and Ice Division studies hydrologic processes in the North and their impact on northern development. It researches the mechanical and electrical properties of snow and ice, examines glaciers, mountain snowpacks, snow metamorphism and other aspects of alpine hydrology. It also maintains an inventory of perennial snow and ice in Canada.

### *Review 1981-82*

The Division carried out an operation (supported by the Arctic Institute of North America) to retrieve the electro-mechanical ice core drill and 75 m of ice core from the 103 m hole on Mt. Logan. This was done successfully, as was the relogging of the hole for temperature, vertical strain rate and tilt. The top of the borehole was also resurveyed for movement. G.K.C. Clarke, University of British Columbia, (UBC) flew over the area with an airborne radar device and obtained additional ice depth profiles. This work concluded the Mount Logan operation.

Bibliographies of Ellesmere Island glaciers and ice islands of the Arctic Ocean have been compiled.

### *Plans for 1982-83*

The Division will analyze the composition of the ice cores from Mount Logan, particularly to establish the recent climatic history of the area.

## *Water Quality Branch*

### **Responsibilities**

The Water Quality Branch collects, analyses, interprets and disseminates water quality data. The Branch obtains these data from specific reference points across Canada and augments them with detailed information collected in comprehensive surveys.

### **Review 1981-82**

The Branch provides services to federal programs related to national parks and to data collection and surveys in the Yukon and Northwest Territories. It participates in the analysis of samples and the storage and dissemination of data collected in the Territories. The work for the Northwest Territories is administered by a group from the Inland Waters Directorate offices in Regina and Yellowknife. Work related to the Yukon is administered from the Pacific and Yukon office in Vancouver. The Branch participates in joint studies with DIAND by providing analytical and interpretive services in water quality management programs.

In the N.W.T. an ongoing monitoring project carried out from 16 stations was started in 1978. The monitoring sites are at the same locations as the hydrometric sites and are sampled by Water Survey of Canada (WCS) staff when they visit the hydrometric stations. Besides measuring the major ions and nutrients from mining activities in the North, the sites are routinely measured for total and extractable metals. Two stations in the N.W.T. (Hay and Liard River) are also part of the interjurisdictional monitoring carried out under the mandate of the 1909 Boundary Waters Treaty.

In addition to carrying out its monitoring work, the Water Quality Branch conducts special studies to answer particular questions. For example, together with Geological Survey of Canada — Energy, Mines and Resources (GSC-EMR), the Branch conducted a special survey of 20 lakes in Cape Herschel in 1981 to determine dissolved mineral and organic chemical content. It carried out another project in 1979 to study pesticides and metals in the atmosphere. This study was done in the Cape Herschel as well as in other High Arctic areas. Reports are now being prepared.

As part of the Mackenzie River Basin Study Program, the WQB brought together all water quality data that federal or provincial agencies had collected between 1960 and 1979. These data were published last year in a large report that summarizes all available information on the water quality of the Basin. The report includes a map of all sampling locations. The data have been coded in the National Water Quality Data Bank (NAQUADAT) format. Accordingly, the data are available for statistical analysis to determine any changes or trends that may have occurred over the last 20 years. The WQB is currently analyzing these data and intends to provide an interpretative report that relates the data to the water characteristics in the Basin.

### **Plans for 1982-83**

A plan for monitoring water quality in the N.W.T. for 1982-83 will be developed. The plan will more adequately address the environmental concerns resulting from increased development in the North. Recently, the federal, Yukon and B.C. governments reached an agreement under the Canada Water Act to study the water resources of the Yukon River Basin.

This initiative has involved the Water Quality Branch in the design of water quality and trend studies. These studies are intended to result in better information on the dynamics of rivers and will identify potential problems resulting from proposed resource developments. Reports on studies of the Schwatka Lake and international boundary reaches of the Yukon River are being published. These reports will be helpful to the Branch in designing the studies noted above.

The Branch will continue to co-operate with DIAND and other water-related services of Environment Canada in northern basin studies and in other water quality management programs by providing analytical and interpretive support.

## *Water Planning and Management Branch*

### **Responsibilities**

This Branch plans water resource studies, develops programs to reduce flood damage and improve water management and advises the Territories on water planning and management. The Branch participates in assessments of the environmental effects of development projects.

### **Review 1981-82**

On November 24, 1980, the Yukon River Basin Agreement was signed by Ministers representing Canada (Environment, Indian Affairs and Northern Development), British Columbia and the Yukon Territory. The Agreement provides for an inter-governmental committee to direct various studies. They are to be carried out over a three-year period at a total cost of \$2.2 million, and will assess the environmental implications of resource development alternatives in the Yukon Basin. An intergovernmental task force reporting to the Yukon River Basin Committee has described the various projects involved, and the Committee has set appropriate priorities.

A final study report of, and eight supplements to, the Mackenzie River Basin Study were reviewed by the Mackenzie River Basin Committee. The material was submitted to the governments of Canada, Alberta, British Columbia and Saskatchewan and was released in February 1982.

Work continued on mapping flood risk areas in six communities in the Northwest Territories. This work was carried out according to a Flood Damage Reduction Agreement signed in 1979. A similar agreement for the Yukon Territory is being negotiated.

### **Plans for 1982-83**

Negotiations will continue toward reaching a Flood Damage Reduction Agreement for the Yukon Territory.

Negotiations leading to an intergovernmental agreement on quality and quantity of Mackenzie Basin waters at boundary crossing points may begin in 1982-83.

## *Water Resources Branch*

### **Responsibilities**

The Water Resources Branch operates through two Divisions: the Water Survey of Canada Division and the Hydrology Division. There are eight Water Resources Branch regional offices across Canada. Six of them are headed by Regional Chiefs in Vancouver, Calgary, Regina, Winnipeg, Guelph and Dartmouth. The seventh office, headed by a Chief, N.W.T. Programs, was established in 1980 and is located in Yellowknife, N.W.T. The eighth is headed by a Supervisor of Operations and is located in Longueuil, Quebec. The Vancouver Regional Office administers Water Resources Branch programs in the Yukon Territory.

The responsibilities of the Water Resources Branch include collecting, processing, analysing, storing, interpreting and providing water quality and sediment content data to assist water resources management regimes.

The Branch also provides advice and assistance in preparing briefing notes and background and position papers for developing policies on various aspects of national water programs.

### *Water Survey of Canada Division (Headquarters)*

### **Responsibilities**

This Division (Headquarters) provides technical support to the Survey's Regional Offices. It develops techniques and standards for the collection, computation and publication of data. The Division maintains data banks, does planning for the network of sediment stations, conducts non-routine hydrometric field surveys and measures the discharge rates of rivers under varying flow conditions. The Division measures the sediment deposited by rivers and surveys and studies the physical changes that occur over time in river channels, drainage basins and estuaries.

### **Review 1981-82**

The "automated moving-boat flow-measuring system" was modified so that it could be used with inflatable boats.

Data collection platforms (DCP's) designed and built in Canada continue to operate in several regions.

A consultant's study provided advice on how the WRB should receive and transmit data sent by satellite. The recommendation to improve and continue to use the Prince Albert receive site is under investigation. The Division completed a study to determine the future electronic data processing (EDP) requirements for the Water Survey of Canada. The Division reached an agreement with the Canadian Hydrographic Service of the Department of Fisheries and Oceans concerning the operational responsibilities of tidal stations in each region.

In co-operation with the National Research Council, the Division installed an experimental solar energy system for trials at a test station in Ottawa. The system is intended to power instrumentation at hydrometric stations at northern or remote sites. Also under development are data collection platforms that will accept data from a combination of hydrometric and meteorological sensors. A digital solid state data recorder is undergoing field testing. Eventually, these recorders are expected to replace the analog strip chart recorders at sites where conditions warrant their installation. The manufacturer is keenly interested in these field trials and has already re-designed the units to incorporate suggested improvements.

### **Plans for 1982-83**

Work will continue on the development and testing of the moving-boat flow-measuring system. The new system incorporates a micro-processor that will compute the flow as it is being measured. A possible site for the use of the system in 1982 is the Mackenzie River. A new mini-computer with various peripheral devices will be installed and programmed at Headquarters as the first stage in the program of renewing the EDP system in each regional office.

### *Water Survey of Canada Division (Regional)*

### **Responsibilities**

Water Survey of Canada (WSC) collects, computes and publishes surface water data for most of Canada. Besides operating a network of hydrometric gauging stations, WSC collects water samples for analysis. It also constructs, operates and maintains stations for recording water levels. These stations provide information on tides and water levels for the Canadian Hydrographic Service of Ocean Science and Surveys, DFO.

### **Review 1981-82**

In the Yukon Territory, the Division built four new gauging stations. The WSC now operates 67 stations in the Yukon Territory.

In the N.W.T. the usual hydrometric data acquisition program was carried out at 127 stations. Twelve of these stations were equipped with DCP's. The Division also operated six tidal stations, two sediment stations and four meteorological stations for DIAND. Water level elevation forecasts for the Mackenzie River were provided each day, but because the water levels on the river were the lowest ever recorded, ten-day advance forecasts were also calculated.

Cross-sections were surveyed along the Peace River as input to a mathematical model that the Water Planning and Management Branch is developing for the Canadian Wildlife Service.

### **Plans for 1982-83**

On April 1, 1982, under the terms of an agreement with the Canadian Hydrographic Service, the WSC will relinquish its survey responsibilities at tidal water level stations in the Arctic archipelago and along the north coast. The WSC began this field work approximately 14 years ago as a result of a government reorganization at that time.

In the Yukon Territory the WSC will continue to operate its network of 67 gauging stations.

The current program of operating the 127 hydrometric, 2 sediment and 4 meteorological stations will continue unchanged, and reconnaissance work for the future installation of stations will be carried out.

### ***The Hydrology Division (Headquarters)***

The Division conducts studies to support and complement the data collection activities of the Water Survey of Canada Division. Its responsibilities include the development of hydrological analytical methods and advising regional staff in the area of data interpretation and network evaluation. It carries out joint Regional/Headquarters studies and represents Branch, Directorate and Service in interagency activities at regional, national and international levels.

### ***Review of 1981-82***

Several new statistical techniques for hydrologic analysis were developed, computerized and documented in reports and distributed to the regions and to the general public. A paper was also prepared jointly with members of the Water Planning and Management Branch. This paper discussed the theoretical foundation of one of the foregoing techniques and was accepted for publication in the "Journal of Hydrology". The Division also conducted seminars in the Regions on the use of these new techniques.

The Division began preparatory work related to the evaluation of various mathematical models describing the relationship between variations in climate and stream flow. Work was also started on a data collection network to augment hydrometric data and information resources.

A procedure has been developed for storing and retrieving Canadian reference documents that are to form the material for the HOMS National Reference Centre. HOMS (Hydrological Operational Multipurpose Subprogramme) of the World Meteorological Organization (WMO) Operational Hydrology Programme is a mechanism for hydrological technology transfer among members of the WMO for use in their water resources projects.

### ***Plans for 1982-83***

Techniques and procedures will be documented or developed to enable short periods, for which data were not reported in the hydrometric data base to be filled in. Studies will be undertaken to improve existing and develop new documentation techniques for flow frequency analysis and estimation of stream flow. Finally, an evaluation by contract of the hydrometric network in the N.W.T. will be conducted.

## **Parks Canada**

### **National Parks Activity**

#### ***Responsibilities***

National Parks evaluates geographical areas to determine their potential as national parks and landmarks, and manages existing national parks.

#### ***Review 1981-82***

##### ***New Park Studies***

Parks Canada has identified preliminary areas or "Natural Areas of Canadian Significance" (NACS) in each of the 15 natural terrestrial regions that are mainly in the Territories. Four of these regions have a park in them now and two others have land set aside as possible sites for future parks. Areas in five other regions either have been or will be designated as NACS.

##### ***Northern Yukon***

In 1978, as part of the COPE Agreement in Principle, 38 850 square km were withdrawn for park use and other conservation purposes. An assessment of non-renewable resource on these lands has since been carried out.

##### ***Northern Ellesmere***

A memorandum of understanding to establish a National Park Reserve was signed on February 25, 1982 by the Honourable Tom Butters, the Territorial Government's Minister of Economic Development. The proposed Park Reserve would cover approximately 35 000 square km, and would include some of the most northerly land in Canada.

##### ***Northern Baffin Island (Bylot Island/Eclipse Sound)***

Parks Canada reviewed the proposed national park area as part of the Lancaster Sound Regional Study.<sup>1</sup> Meetings were held in northern communities to determine support for the proposal. Boundary studies were carried out.

##### ***East Arm Great Slave Lake***

Attempts were made to re-open discussions with representatives of the community of Snowdrift on a National Park proposal for which lands were withdrawn in 1970. Community representatives have indicated they are not interested in discussing the proposal. A non-renewable resource assessment was carried out.

#### ***Plans for 1982-83***

Parks Canada's Prairie Region will establish a district office in Yellowknife for implementing new National Park planning proposals.

Park planners will discuss the Park Reserve idea in the North Baffin Island area with the Government of the Northwest Territories, the Department of Indian Affairs and Northern Development and residents of Pond Inlet. The purpose of these discussions is to develop a memorandum of understanding covering the Park Reserve.

<sup>1</sup>The reader is referred to the Indian and Northern Affairs chapter of this publication for a description of the Lancaster Sound Regional Study.

Most of the terms and conditions in the Northern Ellesmere memorandum of understanding will be implemented. It will also include a socio-economic/tourism strategy.

Parks Canada will develop plans for the disposition of land that has been withdrawn for a National Park Reserve at Artillery Lake/East Arm, Great Slave Lake.

#### *Federal/Territorial Parks Consultative Committee*

##### **Review 1981-82**

The Federal/NWT Parks Consultative Committee met in Grise Fjord in October 1981. The purpose of the meeting was to review the draft memorandum of understanding for the Northern Ellesmere National Park proposal, to discuss the proposal with community residents and to review other park-related matters of common interest.

A similar Federal/Yukon Parks Consultative Committee was established and met in Whitehorse in March 1982 to discuss topics such as the development at Kluane and Dawson City and new National and Territorial Park proposals. The co-chairpersons of the Committee are the Yukon Deputy Minister of Renewable Resources, and the Assistant Deputy Minister, Parks Canada.

#### *Kluane National Park*

##### **Review 1981-82**

An Area Plan for the Slims River access corridor was prepared. The development proposal and schedule were reviewed at a meeting of the Federal/Territorial Parks Consultative meeting in March.

Negotiations continued with the Council of Yukon Indians on land selection and other conditions for settling land claims of the Champagne/Aishihik and Burwash Landing Bands affecting Kluane National Park.

##### **Plans for 1982-83**

The Slims River Area Plan will be released to the public in the summer of 1982. At that time, design work on the area will begin, and it should be open to the public in 1985-86. An agreement in principle on land claims settlement affecting Kluane National Park is expected by the fall of 1982.

#### *Nahanni National Park*

##### **Review 1981-82**

Parks Canada has determined that regional planning in the South Nahanni River watershed is necessary to ensure that development in the watershed does not adversely affect Nahanni National Park. Representatives of DOE Services indicated at hearings of the N.W.T. Water Board that such planning was essential. The hearings dealt with two applications for water licences—one from Cadillac Explorations Ltd. and the other from Canada Tungsten Mining Corporation. The need for regional planning as well as Interim Management Guidelines in the watershed was also demonstrated to the Department of Indian Affairs and Northern Development. A baseline and process for monitoring water quality are being prepared by various DOE Services that are involved in the Nahanni area.

Parks Canada has agreed to provide orientation and information services at a visitor centre being built by the Government of the Northwest Territories at Blackstone River.

In August 1981, a large forest fire burned over a 73 300 hectare forest area in the Nahanni National Park. Facilities destroyed by fire at Nahanni Butte, have been replaced.

##### **Plans for 1982-83**

The Department of Indian Affairs and Northern Development will be launching a two-year study in the Nahanni area. Its purpose is to enable the Department to prepare guidelines for developing the area. Guidelines may include a land zoning plan and specify pollution control measures and monitoring systems.

A three-year study aimed at defining aquatic baseline conditions in Nahanni National Park will be carried out. The Inland Waters Directorate (Federal DOE) will carry out the water quality studies, and the Canadian Wildlife Service will conduct the biological studies. The Lands Directorate will also be involved in a one-year mapping study of the Mackenzie Mountains area that will include Nahanni National Park.

Regional planning, mapping and aquatic baseline studies, if effectively co-ordinated, will provide the information necessary to ensure that Nahanni National Park is protected from upstream developments in the South Nahanni River watershed.

Terms of Reference for preparing a Management Plan for Nahanni National Park will be developed, and the planning program will begin. Parks Canada will also carry out a study to describe and analyze the Park's resources.

#### *Auyuittuq National Park*

##### **Review 1981-82**

After consulting with the public in the summer of 1981, the Department completed the Interim Management Guidelines for the Park early in 1982.

##### **Plans for 1982-83**

The Interim Management Guidelines are scheduled to be printed and distributed in the summer of 1982. Further information meetings on the Guidelines will be held with the Government of the Northwest Territories and local residents.

#### *Wood Buffalo National Park*

##### **Review 1981-82**

The Wood Buffalo Management Plan Program continued through 1981-82. Plan options were prepared and reviewed with the public from November to January.

The Park experienced one of its worst fire seasons with over 650 000 hectares of land being burned. Over \$2.6 million was spent on controlling and fighting these fires.

### **Plans for 1982-83**

During the summer of 1982, Park's Canada will review a draft management plan with local communities and the general public. The final plan is expected to be approved by the Minister in late 1982. Design work will then begin on a new park administration and information complex in Fort Smith.

### **Klondike National Historic Sites**

#### **Review 1981-82**

More staff in archaeology, extant recording and restoration design have been decentralized.

A restoration specialist was seconded to the Yukon Government to assist with implementation of the Tourism Subsidiary Agreement.

A strategy for implementing the management plan approved in 1978 is being developed. This strategy will assign priorities for implementing parts of the plan up to 1990, according to current and expected economic conditions.

### **Plans for 1982-83**

The strategy for implementing the Management Plan will be completed. The Park will improve its maintenance capability, thus freeing existing staff for new development work. Restoration of the St. Andrew's manse for staff housing will be completed and work will begin on restoring Winaut's Store.

### **Whitehorse National Historic Sites**

#### **Review 1981-82**

On July 1, 1981 the S.S. Klondike was commemorated officially as a National Historic Site. The vessel and other visitor facilities were officially opened at a public ceremony in Whitehorse. This opening marks the culmination of seven years of work by Parks Canada to restore and furnish this historic vessel.

Discussions continued with officials of B.C.'s Heritage Resource Branch on acquiring 80 square miles of land in the Northwest corner of the Province. The land would be used to establish the Chilkoot Trail portion of the International Gold Rush Trail Historic Park, which stretches from the Alaska coast at Skagway and along the Yukon River to Dawson City.

### **Plans for 1982-83**

A memorandum of agreement to acquire land and to establish a National Historic Park in the area of the Chilkoot Trail is expected to be signed during the summer of 1982.

### **Canadian Forestry Service**

#### **Pacific Forest Research Centre**

#### **Review 1981-82**

The Centre completed the five-year assessment of the regeneration of white spruce by natural seed-fall and by artificial seed placement on river flood plains at two locations near Watson Lake. Regeneration data obtained by low level aerial photography of the Watson Lake area were analyzed.

The Yukon continues to be an important source of seed (particularly lodgepole pine seed) for Scandinavian countries. The Centre has been testing and certifying seeds at collection sites, where seeds are tested for purity and germination.

The Centre developed management plans for preventing the valuable lodgepole pine stands from being over-exploited commercially. The plans were developed in response to requests from the Northern Affairs Program of DIAND.

During 1981 the Centre completed maps showing the vegetation cover of the East Kluane Planning and Kusawa Lake areas. Field examination were conducted in parts of "Ecoregions" 4, 6, 7 and 8 to collect data on forest productivity and plant succession. This work is a part of program designed to classify the forest land in the Yukon Territory and develop renewable resource and forest management statistics that can be incorporated in the National Forest Statistics Program.

Field work was completed on the Kluane National Park Fire History phase of the fire management plan for the Park. Types of fuelwood in the area were identified, and a fire hazard rating scheme was prepared and field-tested in the Park.

A preliminary survey of vegetation and certain environmental factors along the Dempster Highway was completed and the results reported.

Populations of forest pests (insects, caterpillars, etc.) were monitored at sample points along the Alaska Highway to assess the damage done to trees. The most noteworthy damage was the defoliation of trembling aspen by the *large aspen tortrix* in the Aishihik River, Beaver and Dawson creeks, Little Salmon and Little Atlin lake areas.

### **Plans for 1982-83**

The PFRC plans to continue its diversified approach to gathering forestry data.

The five-year growth measurement from the seeding and planting trials at Watson Lake will be reported. The Centre will extend the regeneration survey begun in 1980-81. The purpose of this work will be to determine what inhibits the ability of trees to regenerate at particular sites.

The PFRC will continue to certify the quality of lodgepole pine seed for sale on international markets by testing these seeds for purity and germination. The certification program is expected to expand to more seedlots.

Three ecoregions will be surveyed in order to develop plans for managing the forests and wildlife and to assess the amount and type of fuelwood available in these areas.

Statistics on renewable resources for the Yukon will be organized in a new computerized data base. This work will involve input from PFRC; Forestry Branch, DIAND; and FORSTATS. This data base will provide forest management statistics for the Forestry Branch DIAND and information for the National Forests Statistics Data Base.

The first phase of a forest fire weather index for the Forestry Branch DIAND planning program for protecting settlements from forest fires will be tested. A report entitled Kluane National Park Fire History and Fire Management Planning Study will be completed.

Finally, the Centre will carry out its annual Insect and Disease Survey of the Yukon.

## Northern Forest Research Centre

### Review 1981-82

A new study of the effect of variations in climate on the productivity of forests was continued. The Centre contributed to reviewing development proposals and assessing the environmental impact of projects such as the Beaufort Sea Development, Borealis Mine, Liard Highway and the Peace River Hydroelectric Development. A major upgrading of the Large-Scale Photo Sampling System was undertaken with funding obtained from the Department of Indian and Northern Affairs. Forest insect and disease surveys were conducted near Fort Simpson and along the Little Buffalo and Slave Rivers. An economic study on the capacity, production and demand for forest products in the Northwest Territories was completed.

The Centre also represented the CFS on the Fire Management Program Committee to help develop forest management policies and programs in the N.W.T.

### Plans for 1982-83

PFRC will continue to assess the effect of climate variations on forest productivity. It will participate in the federal environmental assessment process. Baseline studies in proposed development areas in Lancaster Sound, Bylot Island and Eclipse Sound will be undertaken. The value of the Large-Scale Photosampling System will be assessed for carrying out regeneration surveys in co-operation with the Yukon Forest Service.

Surveys of forest insects and diseases will be conducted after consultation with DIAND. A major study of fire and its control will be carried out in black spruce stands at Porter Lake, N.W.T. This work will be done in co-operation with DIAND. The Centre will be represented on the northwest Fire Management Program Committee. The data on the forest industry in the N.W.T. will be analyzed and a report will be prepared.

### Forest Statistics and Systems Branch (FSSB)

In 1981, FSSB completed mapping the forest lands in the Northwest Territories. The mapping covers 115, 1:250 000 MTS map sheets for a total of 1 092 944 square km. It includes Wood Buffalo and Nahanni National Parks. In all, 30 000 air photos and 25 LANDSAT images were interpreted. The data were entered in the Canadian Forestry Resource Data System (CFRDS) and are included in the national data base.

Data from the PFRC Yukon RRAMS was converted to CFRDS format and merged with the national data base.

Fire monitoring from 1981 LANDSAT images will be completed in mid-1982 for both the Northwest and Yukon Territories.

## Lands Directorate

### Responsibilities

The Directorate conducts research, provides data and information on land characteristics and provides policy advice on nationally important land use issues. It promotes environmentally sound land planning and management, collects data, carries out research and plans programs in co-operation with other federal departments and agencies. This co-operative effort ensures that all programs comply with the guidelines of the Federal Policy on Land Use.

### Land Resources and Data Systems Branch

### Review 1981-82

The Land Use Monitoring Division continued with its research on and production of the Land Use Information Series maps of the Northwest Territories. The Division finished compiling, drafting and printing 29 maps (scale 1:250 000) for the north Baffin Island - Lancaster Sound region. It completed the research and surveys for another 29 map sheets in the Viscount Melville Sound Area.

The Land Use Information Series maps are now available for most of the mainland area of the Yukon and the Northwest Territories. They combine a wide range of data on renewable resources and the activities associated with them. The maps present information on wildlife and fish habitat areas, native hunting and trapping areas, development areas, mineral resources, historical sites and ecological characteristics. They also contain information useful to land use administrators, planners and communities. The mapping program is financed jointly by Environment Canada and Indian and Northern Affairs Canada. Several other federal agencies also participate in the program.

In conjunction with the mapping program, the Ecological Land Classification and Evaluation Division provided an ecological overview of the Baffin Island - Lancaster Sound region which included: ecodistrict map-unit boundaries; generalized descriptions of relief, landforms, geology, soils, water features and vegetation; climatic information and ecoregion descriptions; and a coastal classification. Two ecological land survey reports were published — one for the northern Yukon Territory, the other for the Lockhart River map area in the south-central Northwest Territories. An ecological map for the Lancaster Sound 1:1 000 000 scale NTS map sheet was produced. In addition, ecological baseline studies were undertaken in the Beaufort Sea Region.

### Plans for 1982-83

The 29 Land Use Information Series maps of the Viscount Melville Sound region will be completed during this year. Field research and map compilation will be carried out for 24 maps in the south Victoria Island - northeast Keewatin area. Several reports and papers relating to various aspects of this program will be published. It is expected that the agreement between Environment Canada and Indian and Northern Affairs Canada will be extended to 1988 in order to complete the mapping north of 60°N.

The Ecological Land Classification and Evaluation Division will provide a general ecological overview and a coastal classification for the Northern Land Use Information Series maps. An ecological map for the Viscount Melville Sound 1:1,000,000 scale NTS map sheet will be produced. In addition, ecological baseline studies will be undertaken for the Mackenzie Mountains region.

#### *Policy Research and Development Branch*

##### **Review 1981-82**

The Federal Land Services Division coordinated the preparation of an inventory of northern areas of significance to the conservation programs of Parks Canada and the Canadian Wildlife Service. The inventory will serve as a basis for developing and co-ordinating departmental plans, and facilitating consultation with other organizations about the designation of various types of protected conservation areas in the North. The Branch also helped to evaluate and further develop DOE policies and program strategies for the North, and advised on submissions related to placer mining in the Yukon.

##### **Plans for 1982-83**

The Branch will continue to assist in the formulation of Environment Canada's positions on native land claims and departmental policies on the North.

#### *Pacific and Yukon Region*

##### **Review 1981-82**

The Lands Directorate's regional office co-ordinated the preparation of DOE's advice to the Northern Pipeline Agency. Part of this activity included a review of the Yukon portion of the proposed Alaska Highway natural gas pipeline. Of particular note was an assessment of the Ilex Pass alternatives. The regional office also continued to provide a member on the EARP Panel, which is reviewing the Alaska Highway natural gas pipeline proposal.

##### **Plans for 1982-83**

The Branch will continue to review documents pertaining to the environmental impact assessment of the Alaska Highway gas pipeline. It will also continue to provide advice concerning the Northern Pipeline Agency/Foothills Pipeline environmental plans, procedures manuals and monitoring program.

Advice and services to the Yukon Government resources inventory program will be continued. It is anticipated that ecodistrict mapping for the southern half of Yukon will be completed. In co-operation with the Directorate's headquarters, shoreline mapping in the Beaufort Sea region will be carried out.

#### **Canadian Wildlife Service**

The Canadian Wildlife Service (CWS) conducts research, manages and administers programs under the Migratory Birds Convention Act and the Canada Wildlife Act. The Service co-ordinates federal, provincial and territorial action on common wildlife problems. It carries out surveys, develops inventories of wildlife and does research on wildlife species and their habitats. Finally, it collects and analyzes data on the animal population and studies wildlife diseases and the effects of toxic chemicals on birds and animals.

#### *Migratory Birds Projects*

##### **Review 1981-82**

CWS continued its program in Wood Buffalo National Park involving research into the breeding and population of the only breeding, wild flock of whooping cranes in the world. CWS also co-operates with the U.S. Fish and Wildlife Service to transfer excess whooping crane eggs to Grays Lake, Idaho. By placing these eggs in "foster nests" of the sandhill crane, biologists are trying to create a second, self-perpetuating wild flock. Also in co-operation with its American counterpart, CWS studies migration patterns and locates stop-over areas of radio-equipped whooping cranes migrating between the Northwest Territories and Texas.

In 1979, CWS completed the white-fronted goose banding project on the Anderson River Delta. This concluded a U.S./Canadian five-year co-operative migratory bird management program.

CWS participated in co-operative research into the distribution, population dynamics, behaviour and ecology of lesser snow geese and Canada geese in the Hudson Bay region. The Service partially financed some programs and was actively involved in others.

##### **Plans for 1982-83**

The Service will continue to carry out its whooping crane research at Wood Buffalo National Park and to transfer the eggs of these birds to Grays Lake, Idaho. CWS expects to do more co-operative radio-tracking of migrating whooping cranes.

#### *Mammalogy Studies*

##### **Review 1981-82**

Major studies on the biology and behaviour of the polar bear continued in the western, central and eastern Arctic. Studies of the distribution and number of seals and arctic foxes are being conducted concurrently because of the ecological relation of those animals to polar bears.

Research continued on barren-ground caribou populations. Work centered on calf mortality and the influence of insects and climate on caribou. Negotiations between the CWS and other agencies have resulted in a draft agreement covering the management of the Beverly-Kaministiquia caribou herds.

### **Plans for 1982-83**

Polar bear studies will continue and field work will be extended into the Foxe Basin Region.

The Service will continue to monitor wood bison released in the Nahanni Butte area.

Studies on barren-ground caribou mortality will continue. If suitable co-operative arrangements can be made with the Territorial Government, CWS will study the range selection of caribou and the effect of recent fires on their movements.

### **Environmental Studies**

#### **Review 1981-82**

Two seasons' work have now been completed on the Eastern Arctic Polynya Project. CWS has mapped fulmar and black guillemot colonies on Cape Vera and has estimated their population. As well, CWS has located and mapped colonies of arctic tern, common eider, black guillemot and glaucous and Thayer's gull on Calf, Devil and Ste. Helen's Islands. A survey of literature and an overview of the biology of polynyas was completed and published as "CWS Occasional Paper No. 45".

At the request of Parks Canada, CWS participated with the Canadian Forestry Service in a natural resource survey of a potential national park site in northeastern Axel Heiberg Island.

### **Plans for 1982-83**

The third year of field work for the Eastern Arctic Polynya Project will continue on seabirds. More work will be carried out to further determine the importance of high Arctic polynyas to polar bears and marine mammals.

CWS also plans to carry out a co-operative natural resource survey of a possible national park site on Bylot Island.

### **Assessment, Enforcement and Habitat Studies**

#### **Review 1981-82**

CWS conducted field surveys to collect information on key concentration areas of migratory birds. The areas surveyed were the coastal regions of the Beaufort Sea, including the outer Mackenzie Delta and Banks Island, as well as the Tuktoyaktuk Peninsula and part of the Yukon coastline.

CWS has undertaken a project to identify the significant natural resources of the Mackenzie Valley and Delta, the Beaufort Sea and the Northwest Passage. This work, to be completed in 1982, is in preparation for the review of the Environmental Impact Statement (EIS) for the Beaufort Sea development and the subsequent Panel Hearings. The project will result in an "inventory" of the location and characteristics of all significant natural resources in the areas noted above. The project will also propose ways of protecting these resources to the extent possible from the effects of development.

In order to assess the potential impact of the proposed Borealis Iron Ore Mine development on the Melville Peninsula, CWS conducted field surveys to determine the concentrations of migratory birds around the development areas. In addition to carrying out this field work, CWS used satellite technology to classify the vegetation and surface features of the development area. This work helped to determine the areas in which significant numbers of birds were concentrated.

CWS screened a number of land use permits, issued appropriate permits on migratory bird sanctuaries and carried out biological studies of birds at the McConnell River Sanctuary on the west shore of Hudson Bay.

In June 1981, the Service determined the population of snow geese nesting in the western Arctic. This work was carried out through the use of aerial photography. Investigations into the distribution and habitat of these birds were conducted in Hudson Bay and the Queen Maud Gulf.

### **Plans for 1982-83**

CWS will continue to conduct field surveys in the Beaufort Sea and environs to assess the potential effects of Beaufort Sea hydrocarbon developments on wildlife.

The exercise to identify all significant wildlife resources of the Mackenzie Valley, Beaufort Sea and the Northwest Passage will be completed. The EIS for the Beaufort Sea development will be reviewed.

CWS will be increasingly involved in reviewing potential hydro development on the Slave and Liard Rivers to assess its possible impact on wildlife.

CWS will complete an air photo survey of Ross' and snow geese nesting in the colonies of the central Arctic (Queen Maud Gulf Migratory Bird Sanctuary). Investigations of goose distribution and habitat in the west Hudson Bay and Queen Maud Gulf areas will continue. A management strategy for the Bylot Island Sanctuary will be developed.

The Service will monitor Arctic commercial developments more closely to determine the degree of compliance with the Migratory Birds Convention Act and Regulations.

### **Summary of Direct Northern Expenditures (000's)**

	\$	%
<i>Total Forecast 1981/82</i>	29 156	100.0
<i>Expenditure by Northern Objective:</i>		
Protection of the Environment	12 668	43.4
Economic Growth	11 007	37.8
Sovereignty and Security	2 859	9.8
Leisure and Recreation	2 311	7.9
Quality of Life	311	1.1

# External Affairs

The Department of External Affairs' activities in the North involve the operations of foreign governments and their agencies. It advises on matters having foreign policy implications, maintains a co-ordination and operational role in matters of international law and policy relating to the Arctic and negotiates agreements with other countries proposing activities in the North. Within the Department of External Affairs, a number of bureaux handle different aspects of Arctic matters. (Early in 1982, the trade sector of the former Industry, Trade and Commerce Department was merged with External Affairs. At the time of writing, the precise effect of that organization on External Affairs' role in Northern matters had not been determined.)

The Bureau of Energy, Investment and Science Relations co-ordinates Canadian policy on international and intergovernmental co-operation in Arctic scientific and environmental matters. It provides advice to government departments on international policy aspects of scientific conferences and international Arctic expeditions. As well, the bureau advises on scientific exchanges and agreements between Canada and other circumpolar nations. The Bureau facilitates international contacts between Canadian government departments and agencies and their foreign counterparts. When a foreign nation wishes to carry out scientific activities in the Canadian North the Bureau acts as the liaison between the foreign country and the various departments that are involved in considering the request. The Bureau also co-ordinates departmental responsibilities in transportation matters, including the international aspects of Arctic civil aviation and Arctic shipping. It co-ordinates information-gathering on external developments pertaining to Arctic transportation technology and plays an active role with respect to environmental issues in the OECD, UNEP and the UN Economic Commission for Europe (ECE).

The Bureau of Energy, Investment and Science Relations monitors foreign economic interest in the development of the Canadian North. The Bureau works to ensure that any development will be both consistent with our international commitments and policies, and in keeping with our own objectives for economic development. The Bureau also co-ordinates activities on the international aspects of large energy projects in the arctic.

The Bureau of Legal Affairs ensures that Arctic activities and programs are consistent with existing and evolving principles of international law. For example, the Bureau oversees the application of Canada's rights and duties as contained in the 1968 Convention on the Continental Shelf. The Bureau consults with departments and agencies that are responsible for the surveillance of coastal waters and for enforcement activities arising from related legislation. The Bureau is concerned with the use of Canadian arctic waters by foreign ships. It also provides the chairman of the Interdepartmental Panel on Arctic Waters. The Bureau co-ordinates Canada's international efforts to prevent ocean pollution, according to the 1970 Arctic Waters Pollution Prevention Act.

The Bureau of European Affairs is responsible for co-ordinating relations with the Nordic countries. It handles many of the exchanges and activities between Canada and these countries on northern issues. The Bureau heads the Circumpolar Affairs Panel created in April 1979 to promote greater co-ordination within the Department when dealing with foreign policy questions relating to the North.

The Bureau of United States Affairs co-ordinates Canada-United States relations in the Arctic. The Bureau is involved in matters having to do with areas such as science, technology and communications. As well, the Bureau co-ordinates bilateral energy, environment and transportation questions, particularly along the 1 000 km Alaska/Yukon border. It is responsible for the foreign policy aspects of northern pipelines. These responsibilities include monitoring the United States' activities associated with the Alaska Gas Pipeline and the termination of the Haines-Fairbanks Pipeline. It co-ordinates the foreign policy aspects of Beaufort Sea oil drilling, holds ongoing consultations with the United States about the environmental aspects of the Canadian exploration program and forthcoming US lease sales. The Bureau is concerned with a series of northern environmental questions such as trans-boundary pollution, migratory birds and wildlife, bilateral co-operation in creating and managing parks and historic sites, designating and managing "wild" rivers, and management of trans-boundary rivers. In transportation, it has been responsible for co-ordinating the foreign policy aspects of such subjects as the reconstruction of the Haines-Alaska Road (Shakwak Project) and the White Pass and Yukon Railway.

The Bureau of International Security Policy and Arms Control Affairs provides liaison between foreign governments and various Canadian government departments. In matters relating to protecting Canada's security and sovereignty in the Arctic, the Bureau works mainly with the Department of National Defence.

The office of the Chief of Protocol, acting jointly with the Department of Indian Affairs and Northern Development, organizes an annual tour of the Arctic for approximately 20 heads of diplomatic missions accredited to Canada. Thus, each head of a diplomatic mission is given an opportunity to visit the Arctic during his or her tour of duty in Canada.

The Bureau of Information provides Canadian diplomatic posts abroad with information on northern issues and concerns. In 1981, the Bureau filled many requests from foreign journalists who wanted information about Canada's North. Photographs depicting conditions in the Arctic, its geography and its people were sent out for use in post publications and as part of the general information program. Several foreign journalists and "opinion-formers" visited the North under the Department's auspices during 1981. The Bureau of Information purchases copies of films dealing with northern Canada and distributes them to posts, where they are shown to local audiences.

The Bureau of International Cultural Relations is responsible for travelling exhibitions of Canadian art. Exhibitions include two collections of Eskimo prints from the Department's permanent collection and an exhibit entitled *Inuit Retrospective*, which belongs to the National Museum of Man. The Bureau is in charge of co-ordinating those activities of Canadian agencies and the UNESCO Secretariat directed toward including Canadian sites on the World Heritage List. Two of the four Canadian sites on that list are in the North: The Kluane National Park in the Yukon and the Nahanni National Park in the Northwest Territories.

The Department's Passport Office has prepared a passport information pamphlet for person living in the North. A supply of these pamphlets was sent to the Northern Operations Branch of the Department of Indian and Northern Affairs in the Yukon. They explain how to apply for a passport and direct attention to the services that regional passport offices across the country provide. The information pamphlets also explain the procedures to follow in the event of an emergency travel situation.

Departmental information services are provided to the two Territories. Each year, a Commonwealth Day poster and teacher's guide are distributed to schools in the North. Many N.W.T. and Yukon residents are on departmental mailing lists for copies of press releases, speeches and statements on Canadian foreign policy and international relations. The Department's travel advice booklet *Bon Voyage, but ...* is distributed in the North. From year to year, group visits to the OECD (in Paris), NATO and the ED (in Brussels) include a representative from either the N.W.T. or the Yukon.

# Federal Environmental Assessment Review Office

## **Responsibilities**

On December 20, 1973, the Cabinet established a federal Environmental Assessment and Review Process (EARP). Its purpose was to assess the potential environmental consequences of federal projects and to take these findings into account in planning and carrying them out.

EARP covers projects that need federal funds, that are initiated or sponsored by federal departments and agencies requiring federal funding, or which involve federal property. All federal departments and agencies are subject to the Process, except proprietary Crown corporations and any regulatory agencies that are invited to participate.

The Federal Environmental Assessment Review Office (FEARO) administers EARP. Its Executive Chairman reports to the Minister of the Environment.

Under the Process, departments and agencies screen proposed projects for their potential adverse effects. If the effects are not apparent, a more detailed examination known as an Initial Environmental Evaluation (IEE) is carried out. FEARO encourages organizations to solicit public input in the early stage of planning any activities that may be environmentally sensitive. If either the screening or the evaluation indicates potential significant effects, the project is referred to FEARO for a formal review.

Each project is reviewed by an independent panel appointed by the Minister of the Environment.

A panel reviewing a project publishes guidelines for the Environmental Impact Statement (EIS). This statement is prepared by the organization planning the project. As part of its review, the panel holds public meetings and subsequently submits a report to the Minister. The report describes the major potential effects of the project and contains conclusions and recommendations. Decisions on the panel's recommendations are made by the Minister of the Environment and the Minister of the initiating or sponsoring department.

## **Review 1981-82**

The two joint provincial-federal reviews of the southern component of the Arctic Pilot Project were completed. This Project was proposed by a consortium that includes Petro-Canada. It involves liquefying 6.4 million cubic meters of natural gas a day from Melville Island and shipping it to eastern Canada by ice-breaking tankers. Two choices for a receiving terminal in the south were considered: Gros Cacouna, Quebec and Melford Point, Nova Scotia. The Quebec review considered a receiving terminal and the shipping route off the Quebec shore. In Nova Scotia, the review looked at a terminal and the shipping route from 60° N to Melford. Both panels concluded that the project could proceed, subject to certain conditions.

The panel review of the Baffin Bay exploratory drilling program has been delayed pending the outcome of the Lancaster Sound Regional Study. The project, proposed by Petro-Canada, would involve exploratory drilling for hydrocarbons near the eastern limit of Lancaster Sound.

In June, the review of the proposal by Foothills Pipe Lines Ltd. to build a large diameter gas pipeline through Canada, from Alaska to the states below the border, continued. The panel considered a 90 km stretch through the Ibex Pass near Whitehorse, as well as 11 other possible route combinations. In its July 1981 report to the Minister, the panel concluded that the Ibex route, the one favoured by the Company, should be rejected because of the adverse environmental effects that could result from increased access to this remote area. The panel also felt that the route would eliminate the option of the Alaska line joining with the proposed Dempster lateral pipeline.

A panel was formed to assess the proposed Slave River hydro project near Wood Buffalo National Park. It issued guidelines for an EIS and is now awaiting the results of a two-year feasibility study by Alberta before continuing its review.

In June, the Beaufort Sea panel distributed draft guidelines for an EIS for the Dome, Esso and Gulf project to exploit the oil and gas reserves in the Beaufort Sea. The Companies propose to extract oil and gas and ship these products south by pipeline or ships, or both. During November and December of 1981, the panel held public meetings across the Arctic to discuss the draft guidelines. It heard comments not only about the guidelines, but about the review process itself. At the end of March, the final guidelines were distributed and the panel was preparing an interim report to the Minister, based on its meetings and the briefs it had received.

During the year, the panel decided that some issues should be discussed by government departments and agencies, rather than by the proponents. Therefore, it asked these departments and agencies to prepare position papers about the possible effects of the proposal on their programs, policies, and activities.

In August, a pilot funding program was set up in response to recommendations from various public interest groups and previous panels. It was designed to help groups participate in the review. The pilot program, with specific criteria, is administered by an independent committee that reports to the Executive Chairman of FEARO. By the end of March, \$325 000 had been distributed to 10 groups. This was the first time that funds had been made available to help participants prepare for the panel meetings.

#### ***Plans for 1982-83***

The Alaska Highway pipeline panel will hold meetings in June 1982 to consider the information it requested at an earlier stage in the review. The panel is expected to make its final report to the Minister in the fall of 1982.

The Beaufort Sea panel, as a result of the guideline meetings, felt there was a need to improve the understanding of the environmental assessment review process. It will hold community meetings during the remainder of 1982 to discuss the review and the guidelines and help prepare the communities for participation in the final meetings.

At the beginning of the year, some \$292 500 will be awarded to help participants continue their preparations for the review. Additional funds may be available during the year.

# Department of Fisheries and Oceans

## **Review 1981-82**

Staff provided advice on the Department's position on proposed hydroelectric developments on the Slave and Liard Rivers. The Department noted that frequent, uncoordinated changes to the flow of these rivers could adversely affect fish and wildlife of the lower Mackenzie River. The Department commented on the need for stronger federal powers to address this potential problem.

Placer mining in the Yukon continued to be of real concern to fish habitat managers and the matter was discussed with senior officials of DIAND.

Departmental staff also contributed to the work of the Beaufort Sea Task Force, whose recommendations led to the formation of the Beaufort Sea Office. The Branch seconded one of its staff to the Office for a six-month period.

Further contributions were made to the Lancaster Sound study and to the completion of the Green Paper. Staff also participated in preparing several policy papers related to Northern Development.

## **Plans for 1982-83**

A departmental habitat management policy will be completed during 1982. The policy will be fully applicable to the North as well as to the rest of Canada. Consultations on this policy will be held in the Northwest Territories and the Yukon, and with DIAND.

The Branch will continue to focus on problems associated with development in the Beaufort Sea — Mackenzie Delta area. It will direct attention to DIAND's land use policy and the Department's role in implementing the policy. The Branch will particularly stress identifying critical habitat areas and determining what can be done to protect them. Discussions with Parks Canada will be pursued in order to assist in developing a policy on marine parks, particularly in the North.

## **Resource Research Branch (Headquarters)**

### **Responsibilities**

The Branch participates in developing policy on scientific issues in the Arctic. It facilitates the co-ordination of DFO's Arctic fisheries research programs and serves as a focal point for advice on the protection of endangered species.

### **Review 1981-82**

Branch staff co-ordinated scientific input into a departmental review of the status of the bowhead whale. The Branch also provided input in the development of a policy position on aboriginal hunting, and provided scientific expertise to the Committee on Whales and Whaling, which independently reviewed the bowhead question.

As part of Canada's commitment to the Scientific Committee of the International Whaling Commission, the Branch organized a departmental review of past Arctic whale research activities and made future plans. A summary report is being prepared.

## **Responsibilities**

The Department is responsible for fisheries research and management throughout the Canadian North. It draws its authority from several Acts, including the Fisheries Act. The Department implements oceanographic and hydrographic programs and co-ordinates ocean policies and programs of the federal government.

Arctic fisheries management is the responsibility of regions, the Pacific (Yukon) and the Western (NWT). Fishery Officers in the territories carry out enforcement and inspection programs; to a limited extent, they also fulfil fisheries management functions. Regional headquarters in Vancouver and Winnipeg provide professional assistance for fisheries and fish management. Departmental headquarters in Ottawa provides input to the policy development process. The Arctic Biological Station at Ste. Anne de Bellevue, Quebec, provides a marine biological research service to northern fisheries programs.

## **Fish Habitat Management Branch (Headquarters)**

### **Responsibilities**

The Branch participates in policy development for fish habitat management and protection in the Arctic. It represents Headquarters on a number of interdepartmental committees concerned with northern development and environmental protection.

Branch staff also contributed to the clarification of Canada's position on listing species under the Convention on International Trade in Endangered Species (CITES); they played an active role in Europe in attempting to ensure that only legitimately endangered species are listed. Staff also provided input to the Committee on the Status of Endangered Wildlife in Canada (COSEWIC), a group that includes government and non-government representatives from across Canada. In 1981, the Ministers of Fisheries and Oceans, and Environment, officially declared the bowhead whale to be an endangered species.

#### **Plans for 1982-83**

Departmental policy on whale hunting in the Arctic may be developed in the upcoming year; the scientific basis for this policy will be an essential component.

More effective mechanisms for co-ordinating research programs are being developed. Scientific statements on the implications of oil and vessel traffic to Arctic fish and marine mammals will be completed. These statements will serve as the base for the Department's sectoral policy statements.

#### **Northwest Territories**

##### **Review 1981-82**

##### **Fisheries Resources**

Fishery management field activities involved investigations into both inland and coastal (anadromous) fisheries.

Biological data were collected on commercial and sport fishing resources, as well as on subsistence (domestic food) fish resources.

The Department continued to monitor the commercial fisheries on Great Slave Lake, Victoria Island (Cambridge Bay area) and along the Keewatin coast. It also carried out stock assessment studies on Great Slave Lake whitefish populations and Wellington Bay (Victoria Island) anadromous Arctic char populations. Preliminary work was also done in the Tuktoyaktuk area, on the feasibility of commercially harvesting herring for their roe, and the experimental fish weir (Saputit) project at Jayco River (Victoria Island) was concluded.

Monitoring sports fishing activities included counting fish taken at Polar Lake in the Hay River area, at Gordon and Nueltin Lakes, at Tree River and High Arctic Sport Fishing Lodge (Victoria Island) and at Lake Hazen (Ellesmere Island). In addition, Contwoyto and Upper Cabin Lake in the Yellowknife area were surveyed to assess their potential for sports fishing. Various domestic fishing camps were visited to obtain information relating to the fish caught.

Marine mammal field activities included monitoring of the Mackenzie Delta beluga hunt. The Department hired six local Inuit under contract to observe the hunt in camps between Shingle Point and Tuktoyaktuk. Over 75 per cent of all hunters were interviewed for data on numbers of animals caught, lost and the hunting effort required. Landed whales were also biologically sampled.

Aerial surveys were conducted on beluga in Cumberland Sound during early August, and also along the west coast of Hudson Bay from Fort Severn (Ontario) to Rankin Inlet (N.W.T.) in July and from Repulse Bay (N.W.T.) to the Nelson River (Manitoba) in August.

##### **Fish Habitat**

Departmental staff participated in a number of studies with the broad objective of defining the anadromous and freshwater fisheries resources of the south Beaufort Sea area and the extent to which these resources could be affected by the development of hydrocarbon resources in the region.

Studies to describe the fish resources of Tuktoyaktuk harbour were begun. In addition, studies were begun of two watersheds draining into the harbour to determine the extent to which anadromous coregonids and other fish species use them as feeding, spawning, rearing and wintering areas.

Section personnel also participated in a joint DFO-DIAND program to monitor the effects of effluent from the Nanisivik lead-zinc mine on Baffin Island. A similar monitoring program was carried out at the Polaris Mine on Little Cornwallis Island, which began operations in late 1981.

The group began a project to enable an inventory of fish and marine mammals in the Beaufort Sea area to be made. Susceptibility of marine habitats to man-made disturbances will also be investigated. Land-use mapping surveys were done under contract of a number of Arctic watersheds.

Staff participated in reviewing several major industrial projects in the region and prepared policy and guidelines on the use of explosives in the waters of the N.W.T. and draft guidelines for dredging projects.

Research on the physical, chemical and biological processes of fresh and Arctic waters, and how man's activities alter aquatic habitats, continued through the year.

Problems associated with the presence of natural uranium and its degradation products in lakes, streams and in the Saqaujuac estuary are being studied.

Samples of freshwater fish, estuarine fish, crabs, kelps, seal, walrus, and polar bear have been obtained to determine the accumulation of uranium series elements in the food chain. Sediment cores of freshwater lakes and the Saqaujuac estuary are being analyzed for natural radionuclides, bomb fallout nuclides, and global lead and mercury fallout.

Freshwater phytoplankton and zooplankton research was done on control and nitrogen and phosphorus fertilized lakes at Saqaujuac. Samples of lake zooplankton from the arctic islands and mainland NWT and Yukon are being used in zoogeographic studies.

##### **Industry Services**

Four out of five registered plants were formally surveyed in the N.W.T. to determine their ability to maintain certification status. More than 180 plants were inspected to monitor their compliance with operational requirements.

In addition, more than 600 microbiological analyses were performed on domestic fish.

Of approximately 80 commercial fishing vessels, 33 were inspected. Approximately 1.27 million kilograms of fish produced in the N.W.T. were subject to inspection in 1981. A total of 1,683 samples of aquatic biota taken in 1980 and 1981 from an N.W.T. mine site were analyzed, with 14,150 analyses completed for mercury, arsenic, selenium, lead, cadmium and zinc. Five vessels were surveyed to determine their ability to meet new vessel certification requirements under the Quality Improvement Program.

Major activities in fisheries development included the following:

- A project was carried out to test the feasibility of a gillnet fishery to harvest Pacific herring in the Mackenzie Delta area and to determine the time of roe maturity from that species.
- The use of lake whitefish and broad whitefish as possible sources of caviar production was investigated. Enough data were obtained to indicate that broad whitefish is an appropriate source of roe for a high-quality caviar product.
- The feasibility of a modified saputit (fish weir) method for harvesting arctic char was successfully demonstrated. Local Inuit fishermen participated in the project, which was carried out on the Jayco River on Victoria Island.

#### *Conservation and Protection*

The Northwest Territories are divided into five sub-districts, with headquarters in Yellowknife. Fishery officers were involved in the enforcement of the Fisheries Act and regulations. They were also engaged in collecting harvest data, conservation education, habitat protection measures and other activities of the Department in the North. Staff participated in five interdepartmental and Territorial Government committees where DFO terms and conditions were developed and incorporated into licences or permits issued by other agencies. Staff also participated in eight advisory committees on the use of fish resources.

#### *Plans for 1982-83*

Monitoring of the commercial fisheries on Great Slave Lake, in the Cambridge Bay area of Victoria Island, and along the Keewatin coast will continue. As well, staff will assess the stocks of whitefish in Great Slave Lake and anadromous Arctic char in the Cambridge Bay area. Potential for a Pacific herring roe fishery along the coastal area of the Mackenzie Delta and commercial exploitation of freshwater species within the delta area will be assessed. Data on various sports and domestic fisheries will also be collected. Monitoring of marine mammal activities, including beluga, narwhal and walrus, will continue.

Detailed studies will continue of the fisheries resources of Tuktoyaktuk harbour and two freshwater tributary systems, as will the study to reaffirm migration routes, timing and location of spawning areas in the Mackenzie River.

Resource inventory and habitat mapping for the Beaufort Sea area will be expanded to cover the Northwest Passage and Hudson Bay/Hudson Strait. A project to assess how proposed water resources development in the Mackenzie River basin will affect fish, marine mammals and their habitats will be initiated. Arctic land use surveys of the southern portion of Victoria Island and the northeastern Keewatin district will be carried out.

Research activities will include: studies of photosynthesis and primary production in Cardigan Strait polynya; reconnaissance of potential research areas in Barrow Strait — Lancaster Sound for long-term studies on near-shore, benthic fishes and on Arctic cod; collection of tissue samples of narwhal, beluga, walrus, ringed seal and bearded seal for biosystematics investigations and development of suitable biochemical methods for stock identification; biochemical genetic investigations of population structure of inconnu in Great Slave Lake and on coregonids in Mackenzie Delta; experiments on phosphorus and nitrogen additions to Saquaquac lakes and on the effects of exploitation strategies on Arctic char and lake whitefish; continuation of investigation of stocks of lake whitefish in Great Slave Lake; experimental studies on metals and radionuclides in fresh and estuarine waters and food chains; and, the monitoring of and historical research on long-range atmospheric pollution (acid rain, global fallout of lead and mercury) and their effects on fish. In addition to the maintenance of existing regulatory requirements, a comprehensive program to improve the quality of fisheries will be continued in the N.W.T. Landing sites will be surveyed to obtain a data base on the extent to which they conform to cleanliness and operational requirements.

The Saputit weir fishery project will be continued at the Jayco River location and an automated winter fishing system will be further tested on Great Slave Lake. A trawl or trap-net fishing project is planned for selected areas of Great Slave Lake and other smaller lakes to test the feasibility of harvesting whitefish and pickerel with a minimum loss of sport fishing species.

In the area of field services, greater emphasis will be given to enforcement of regulations, the inventory of the harvests and local implementation of management programs. To accomplish this expanded level of activity, biologists will be added on a full-time basis to offices at Frobisher Bay and Hay River.

#### **Yukon Territory**

##### *Fisheries Resources*

The Department manages freshwater fish as well as anadromous species in the Yukon Territory. Fishery officers are involved in day-to-day management of the resource and in activities such as collecting fishery catch statistics, setting and enforcing regulations and habitat management. A small biological unit undertakes programs designed to aid in the establishment of regulations and long-term management strategies.

##### *1981-82 Programs*

Most of the programs undertaken in 1981-82 were a continuation of those undertaken in previous years.

A salmon counting weir on the Klukshu River, a tributary of the Tatshenshini River (Alsek system) was in operation for the sixth consecutive year to count the number of sockeye, chinook and coho using this stream. In addition, salmon were sampled for length, weight, sex and age, and a small project was carried out to estimate the number of fish caught by anglers. A total of 20 348 sockeye, 2 113 chinook and 1 170 coho passed through the weir between May 22 and October 14. Anglers caught an estimated 566 sockeye, 183 chinook and 82 coho. Restrictions on the Indian Food Fishery limited the 1981 catch.

The commercial catch of salmon in the vicinity of Dawson was sampled as in previous years for length, weight, sex and age. Subsistence fisheries were monitored along a 480 km stretch of the Yukon River between Dawson City and Carmacks, and on the Pelly River between the Yukon River and Pelly Crossing.

Chinook salmon passing through the Whitehorse fishway was monitored again, with the 1981 total being the second highest on record.

A survey of Yukon lakes was undertaken in 1981 to provide productivity estimates to assist in establishing regulations for the sport and commercial fisheries. The results indicated that Yukon lakes are generally of low productivity and could be overfished if not carefully managed.

#### *Proposed 1982-83 Programs*

The Klukshu river program is expected to continue in 1982 with improvements in the methods used to estimate the number of fish caught by anglers. The Department also plans public relations associated with the "creel census". An information leaflet for public distribution will provide some background on the salmon resource of the area. New sport fishing regulations for the Klukshu and nearby streams will be operating in 1982.

The chinook salmon passing through the Whitehorse fishway will again be monitored in 1982.

The largest program to be carried out in 1982 will be the Yukon River Basin Study. The study program is being carried out jointly by the Governments of Canada, British Columbia and Yukon Territory. The objective is to institute a planning framework within which to evaluate potential development alternatives in the Basin. The 1982 investigations will include tagging salmon to determine their spawning locations, estimate the fish population and the size of the commercial fishery catch, studying fishery productivity on selected lakes, and performing bioassays on the effects of placer mining sediments on grayling. It is also proposed to evaluate a habitat categorization model under development by the Yukon Territory.

#### **Arctic Biological Station**

##### *Review 1981-82*

Further studies of the distribution and abundance of ringed seal breeding lairs in the fast ice of Prince Albert Sound, western Victoria Island were carried out. The role of the arctic fox as a predator of whitecoated pups was also studied. The use of a trained dog (a Labrador Retriever) to detect breeding lairs was demonstrated to biologists from the Alaska Department of Fish and Game. The Biologists received training in using and handling for this purpose. In early July, a small hut was erected on the west side of Dundas Harbour, southeastern Devon Island, to serve as a base from which to study ringed seal behaviours, particularly in relation to predatory polar bears.

The behaviour of white whales was studied in the clear, shallow waters of Cunningham Inlet, northern Somerset Island, where about 1500 whales congregate each summer. This was the second year of a long-term project that will try to explain the importance of these areas to the survival of the white whale. As a further part of the white whale study, a detailed aerial survey was made of Barrow Strait, Lancaster Sound and Prince Region Inlet, using a helicopter supplied by the Polar Continental Shelf Project. More studies of behaviour were done and photographs taken of representative groups to provide information on the proportion of calves, immatures and adult animals.

One scientist spent the month of August teaching a marine ecology course to students of the Renewable Resources Training Program of the Department of Education, Government of the Northwest Territories. This course was conducted from the DFO field camp on the southeast coast of Baffin Island between Frobisher Bay and Cumberland Sound.

Biological oceanographic activities included further studies of inshore ecology at the head of Frobisher Bay. The studies particularly focused on the composition of the ice biota, detrital fallout, plant production, the vertical distribution of zooplankton and the energy-biomass relationships of macrozooplankton. Studies of how petroleum and the chemicals used to dispose it affect bacteria continued. These studies were part of the Baffin Island Oilspill Study (BIOS) being carried out at Cape Hatt in Eclipse Sound, northern Baffin Island.

#### *Plans for 1982-83*

Early in the year a study will be made of how ringed and bearded seals in southern Prince of Wales Strait are affected by disturbances. The Strait is perhaps the least-known section of the proposed tanker route through the Northwest Passage. Later, a field camp at Dundas Harbour, southeastern Devon Island, will be used to observe the behaviour of ringed seals in an attempt to devise a method of capturing animals live for possible radio-tagging.

The behaviour and vocalizations of bearded seals will be studied at Cunningham Inlet, northern Somerset Island and following the break-up of the fast ice, behavioural studies will be continued on the white whales that congregate in Cunningham Inlet.

The Biological Oceanography Program will continue its coastal ecology study at the head of Frobisher Bay, making full use of the Ikaluit Research Laboratory to process and analyse samples. Projects will include studies of the under-ice biota, detrital fallout, the production of phytoplankton and seaweeds, the dynamics of zooplankton, and the biochemistry and energetics of carnivorous macrozooplankton, several species of which are eaten directly by top-level predators such as sea birds and seals. Studies on the effects of petroleum and petroleum-dispersant mixtures on bacteria will be continued in conjunction with the BIOS project at Cape Hatt.

## **Native Affairs Branch**

### *Responsibilities*

Formed in April 1982, the Ottawa-based Branch is concerned with native-related matters which impinge on the DFO mandate. It is the focal point for developing policy initiatives and advice on the interpretation of native hunting and fishing rights. The Branch plays a lead role in consultations with natives, negotiating fisheries provisions associated with land claims, and co-ordinating departmental native employment and training programs on a national basis.

### *Review 1981-82*

With respect to operations in the Northwest and Yukon Territories, Branch negotiators participated in negotiations on agreements-in-principle with the Committee on Original Peoples Entitlement, the Council of Yukon Indians, and the Inuit Tapirisat of Canada. Numerous position papers and briefing documents were prepared for use in discussions on native rights in both the Territories and the Provinces. Native "desks" were established in the regions to facilitate two-way communications on the various issues.

### *Plans for 1982-83*

The Branch will continue to be involved in claims negotiations being conducted with the Nishga Tribal Council, affecting Northern B.C. fishery resources. The Branch is also expected to become involved with negotiations of the DENE Claim (Western N.W.T.). The Constitutional Conference on native rights, the N.W.T. plebiscite results regarding its division and the wishes of the native people to be more involved in fisheries and marine mammal management and research are expected to generate requests for information and advice.

## **Ocean Science and Surveys (OSS)**

### *Responsibilities*

Oceanographic investigations in the Arctic relate directly to legislative responsibilities in accordance with the Arctic Waters Pollution Prevention Act and Ocean Dumping Control Act regulations. A major responsibility is the determination of physical oceanographic conditions in relation to drilling permits.

OSS provides oceanographic information and advice to departments such as DIAND, EMR and DOE relating to the regulatory process, the review of industry proposals and related environmental studies. It participates in the conduct and/or management of government/industry marine environmental programs.

Hydrographic surveys are conducted in northern waters through the Canadian Hydrographic Service (CHS). The surveys focus on potential tanker routes. CHS also produces, distributes and maintains up-to-date nautical charts, sailing directions and tide tables of northern waters.

## **Institute of Ocean Sciences (OSS) Sydney, British Columbia**

### *Review of 1981-82*

A survey of the Eurasian Basin, known as EUBEX was carried out in co-operation with the University of Washington, in a modified form during March/April 1981. An airborne CTD (conductivity-temperature-depth) survey covering the area of the ice edge north of Spitsbergen to 85°30'N and from the Greenwich meridian to 32°E was carried out from Longyerbyen and the FRAM III Ice camp. These measurements showed detailed features of the Atlantic water entering the Arctic Ocean and its cooling as it travels along the shelf break north of Spitsbergen. This current is the main inflow into the Arctic Ocean and affects the entire Basin.

An observational program conducted in the Beaufort Sea included the installation of current meters, which were recovered later in the year. Observations were made west of the U.S. border in co-operation with the U.S. Coast Guard, and the entire survey formed part of the second Beaufort Sea Winter Ice Experiment, with other components being undertaken by Dome Petroleum and the Atmospheric Environment Service (DOE). CTD sections were taken extending from the deep basin waters to the edge of the landfast ice over a 750 km stretch of coastline. In all, 60 CTD profiles were acquired and 7 moorings were deployed and recovered. Measurements verified the presence of a westward current jet overlying the continental slope.

Data reduction from the Polynya Experiment is now essentially complete. The measurements of eddy heat flux made within the growing (atmospheric) convective boundary layer agree well with existing data taken elsewhere under strongly advective conditions on much larger physical scales. The oceanographic measurements indicate a source of sensible heat in the form of warmer water brought to the surface during high-current periods of the tidal cycle.

The expected year-round use of the Northwest Passage by ice-breaking tankers has stimulated research effort in that area. A great deal of logistic preparation and instrument testing has preceded a major field program planned for the spring of 1982. A complementary industrial survey will be undertaken and the data will be integrated.

Work proceeds on deep oil well blowout studies. The results of laboratory measurements on gas hydrate formation on rising gas bubbles have been incorporated into a mathematical model of a complete bubble plume. IOS is involved in an international co-operative study concerned with the subsea containment and control of oilwell blowout being undertaken in 1982 at the Massachusetts Institute of Technology.

The Institute developed an airborne CTD survey system suitable for use in a Twin Otter aircraft for the EUBEX and Beaufort Sea Surveys. This system has proven very successful. Another current development is a helicopter CTD system designed for use from a Bell Model 206 or similar machine. Construction is proceeding and the system will be used next spring in the Northwest Passage. Work has begun on the design of Mark II of the "salinity sucker", a device for measuring ice crystal content and super-cooling in seawater.

The Practical Salinity Scale, 1978, developed at IOS, has now been officially adopted by the International Association of Physical Sciences of the Ocean (IAPSO), the International Council for the Exploration of the Sea (ICES) and the Scientifica Committee on Oceanic Research (SCOR). The scale will be used for reporting oceanographic data after January 1, 1982. Tables of the new Scale were produced for publication by UNESCO.

#### *Plans for 1982-83*

An estimate based on results from the Polynya Experiment will be prepared of heat transfer rates through areas of open water in the Arctic and Antarctic. Also to be undertaken is an improved description of winter oceanographic conditions north of Svalbard. The description will be based on the analysis and interpretation of data collected during the EUBEX survey in 1981. There will also be an improved description of the currents under winter pack ice, based on the results of the Beaufort Sea Winter Ice Experiment.

The development of a "salinity sucker" for measuring salinities in the presence of ice crystals will be completed, along with an international experimental program to assess the feasibility and usefulness of constructing a device for the containment of a subsea oilwell blowout, with IOS playing a major scientific advisory role. Work will continue to complete development of a temperature/conductivity chain for use on moorings and adaptation of an airborne CTD profiling system for use from helicopters.

An overview/scenario of Beaufort Sea industrial development projections and plans to the year 2000 will be prepared.

IOS will also compile, evaluate and store chemical oceanographic data for the Beaufort Sea and N.W. Passage and other priority Arctic areas.

The Institute will begin to compile and assess Arctic chemical oceanographic data (benthic, planktonic) in order to assess suitable formats for storing biological information.

**Bedford Institute of Oceanography (OSS)**  
**Dartmouth, Nova Scotia**

#### *Review of 1981-82*

Although open areas (polynyas and leads) and very thin ice cover only a small fraction of the Arctic Ocean in winter, they account for a major portion of the sea's surface heat loss. The Institute's turbulence structure and surface heat flux measurements obtained from the 1980 Dundas Island polynya experiment are being compared with the meteorological and oceanographic data obtained by other groups in order to derive empirical expression for surface heat fluxes valid under these extreme conditions.

Studies of the heat balance and surface heat flux at Ocean Weather Ship Bravo in the Labrador Sea are continuing. The 20-year time-series data are being used to compute the year-to-year variations in the monthly heat content of the upper water column and how these relate to surface heat fluxes and residual horizontal advection.

An understanding of iceberg dynamics is important in assessing the safety of oil drilling and production activities in iceberg-infested waters. During the past year, a method has been developed to automatically determine the best possible choice of air and water drag coefficients to represent an observed drift track using wind and current data. Towing forces and other refinements have been added to the model; it has been used to investigate possible effects of towing on existing tracks.

Analyses of deep convection mechanisms in the Labrador Sea have been completed. These show that the dynamics of Labrador sea water formation are nearly identical to those of Mediterranean water formation in spite of the fact that the latter extends to the ocean bottom and takes place over horizontal scales approximately half as large as the former. The large scale circulation of the Labrador Sea and adjacent waters of Baffin Bay are being studied by means of a diagnostic numerical model incorporating realistic data sets.

Studies of the temperature, salinity and velocity fields in and near the Labrador Current are continuing, as are studies on the age and origin of Baffin Bay Bottom waters. Recent determination of the age of bottom water based on helium-tritium measurements indicates it to be about 500 years old. Consistent with the low tritium concentrations, there is no detectable cesium-137 in the bottom water.

Work continued during the year on the long-term monitoring project of the Labrador Current at Hamilton Bank, as detailed in previous reports. A report containing illustrations of the first two years of data is in preparation.

Studies of the impact of freshwater on the water masses of the coastal region of Atlantic Canada have been implemented. Water masses entering the highly productive fishing grounds of eastern Canada are primarily of northern origin with freshwater entrainment from local run-off and melting sea ice. This seasonal pulse of freshwater is thought to play an important role in the biological processes and productivity of the region.

Stable oxygen isotope ratios of selected water samples collected during the Swedish Arctic Expedition (YMER 80) between Svalbard and Northeast Greenland have been used to assess the importance of sea ice meltwater to the excess alkalinity observed in the surface layer. In addition, oxygen isotope data collected in the eastern Canadian Arctic will be used to evaluate the extent of glacial meltwater contribution in Melville Bay and to examine year-to-year variations in sea ice turn-over.

The processes of carbon dioxide assimilation by the oceans are important in view of the worldwide buildup of atmospheric CO<sub>2</sub> from fossil fuel combustion. During the past year, BIO research has focused on the effect of sea ice on both the near surface alkalinity in the water column and on the role of sea ice in the transfer of CO<sub>2</sub> between ocean and atmosphere as measured in Baffin Bay.

Considerable advantage has been taken of the opportunities to carry out oceanographic measurements in the Arctic Ocean through the FRAM III expedition. The vertical distribution of nutrients and some fission-product radionuclides has been measured in the hope that this information might help to clarify how the ocean water layers circulates in the area. Measurements have been made to determine the effects of sea/ice on carbon dioxide transfer at the ocean/atmosphere interface and to construct an alkalinity budget for the Arctic Ocean. This work has benefited from collaboration with Swedish scientists.

Investigation of the nature of the hydrocarbons seeping from the sediments on the Baffin Island Shelf continued, as did surveys of other areas for these sediments and for the baseline or ambient concentrations of petroleum hydrocarbon residues. Investigations of the incidence of methane and other volatile hydrocarbons have been conducted in Baffin Bay and on the Baffin Island Shelf during the last few years to assess their value as prospecting tools in the Arctic marine environment. A particular area of focus in this respect has been the environs of the existing seep off Scott Inlet.

Results from the 1980 marine ecology cruise to the eastern Canadian Arctic (Labrador Sea, Baffin Bay, Lancaster Sound) were highly satisfying. On the basis of this work, the linearity of the relationship between phytoplankton assimilation number and temperature in the Arctic temperature range has been established. The temperature dependence does not appear to be any stronger than it is at temperate latitudes, a result that is not consistent with previous work.

#### **Plans for 1982-83**

Most of the work described above is ongoing and will continue during 1982-83, including the requirement to analyze and interpret the data collected during earlier years. The gradual redeployment of resources in the direction of Arctic research, will continue in all disciplines, and present plans anticipate that work in the eastern archipelago, especially Lancaster Sound, and in Baffin Bay and the Davis Strait region, will continue to expand.

Other plans call for research in the Hudson Strait region, pertaining to the fisheries of the Labrador Shelf. These fisheries are strongly influenced by pulses of nutrient-rich water that leave the Hudson Bay/Ungava Bay region. A joint marine ecology/chemical oceanography cruise is planned for 1982 to investigate the oceanography of the area, followed by land-based studies in succeeding years. In 1983, marine ecologists of the region will participate in CESAR (Canadian Experiment to Study the Alpha Ridge) utilizing an ice station to study plankton-benthic linkages in the Arctic Ocean.

#### **Bayfield Laboratory for Marine Science and Surveys (OSS) Burlington, Ontario**

##### **Review 1981-1982**

The Oceanographic Division of the Bayfield Laboratory for Marine Science and Surveys (BLMSS) began a long-term program to monitor ocean conditions in a section of the Northwest Passage in March/April 1981. Field work was carried out on the stable winter ice cover, from which temperature and salinity profile measurements were made for a regional survey of water structure. A 29-day flow calibration experiment using moored current meters and pressure recorders was employed to study the interrelationships of tidal heights and tidal currents and to understand net transport and pressure differences across the strait. Twin current meter moorings (and pairs of pressure recorders) were placed for year-long measurement of flow to determine seasonal and year-to-year differences, particularly the difference between ice-free and ice-covered conditions. A notable finding was evidence of coastal upwelling and retarded ice growth along the south shore of Barrow Strait and east shore of Peel Sound.

A limited number of biological and chemical observations were made, including bottle casts for phytoplankton and nutrient samples, net hauls, and ice bottom scrapings. The project contributes to a Northwest Passage Oceanography Program under the aegis of the Subcommittee on Arctic Oceanography (SCAO) of the Canadian Committee on Oceanography. It is supported by the Polar Continental Shelf Project of Energy, Mines and Resources and the Canadian Hydrographic Service.

A sea ice radar program was carried out in April 1981 to collect data in order to understand the interaction of low incident angle radar signals with sea ice. Once this interaction is understood, ice can be classified by type from a ship, stationed as much as five to six miles distant from the ice.

During the 1981 Barrow Strait survey, a prototype Arctic current profiling system (G-UMPS), designed and built by BLMSS, was successfully tested. The system is used for unmanned recording of water temperature and salinity, current velocity and direction, using gyroscope technology. A small submarine (SEAL — developed under contract) used to transfer lines under the ice between ice holes, and a new "inverted-V mooring" system were also successfully field-tested.

Results of earlier Hudson Bay oceanographic data collection programs undertaken by BLMSS were presented, including the physical and biological oceanographic properties found in and beneath freshwater plumes under an ice cover; tidal-induced variation in salinity distribution in a narrow estuary (Chesterfield Inlet); the variability of oceanographic parameters in Hudson Bay; the present and future circulation in James Bay; and the use of stochastic-deterministic modelling for estimating tides in branched estuaries.

Information gained from these northern oceanographic studies is used in reviewing applications for resource exploration permits, environmental impact statements and contingency plans, preparing response plans, and for assessing areas of marine sensitivity relative to potential development.

### **Plans for 1982-83**

Considerable effort will be made during the 1982 field program in Barrow Strait to determine water property characteristics throughout the study area. Temperature and conductivity data will be used not only to develop the physical characteristics of the different waters entering Barrow Strait, but also to determine the degree of geostrophys in the flow and to identify significant processes such as coastal upwelling. Year-long current and water level instruments will be retrieved and redeployed. Biological and chemical observations will include sampling for nutrient chemistry, phytoplankton analysis and zooplankton for a better understanding of the distribution of planktonic organisms.

Field tests on a variety of instrumentation modified for operating under arctic conditions will be undertaken including a zooplankton closing net and water sampling bottle, adapted for use through an augured ice hole and a portable A-frame for through-the-ice mooring operations. Changes made to the Anderaa current meter to increase the sensitivity of salinity measurements by a factor of seven will also be field tested. These developments are significant contributions to the interpretation of ocean processes in Arctic channels.

**Champlain Centre for Marine Science and Surveys (OSS)  
Quebec, Quebec**

### **Plans for 1982-83**

The Centre will embark on its first northern field program in 1982 by carrying out the initial part of a two-year study of the freshwater plume of the Great Whale River. This joint physical and biological oceanography project in co-operation with McGill and Laval universities, will concentrate on the effects of the presence of a solid ice cover on the growth of the plume, and reduction of turbulence and entrainment. The availability of light and nutrients for phytoplankton bloom will also be studied, as well as the cell physiology of phytoplankton populations both in the ice and in adjacent waters. The second half of the project will be conducted in March 1983.

**Marine Sciences and Information Directorate, OSS**

### **Responsibilities**

The Directorate participates in formulating national and international policy for OSS Arctic involvement. It provides representatives to interdepartmental committees on northern development and Arctic marine science, stores oceanographic data collected in the Canada North, and disseminates northern oceanographic data in processed form. The Directorate collects, digitizes, analyzes and publishes instrumental wave data and co-operates with exploring oil companies in gathering wave climate data on offshore drilling sites. It also functions as the departmental focal point and responsibility centre for scientific and technical publications.

### **Review of 1981-82**

The Directorate continued to provide the secretariat for the Canadian Committee on Oceanography (CCO) Panel on Ice. In addition, the Ocean Science Affairs Branch represented OSS on the Interdepartmental Environment Review Committee (IERC) which dealt with approvals for exploratory drilling. It participated in the Lancaster Sound Workshops in Resolute and Ottawa, and provided a member of the Lancaster Sound Regional Study Steering Committee. The Branch also participated in the establishment of an Environmental Advisory Committee on Arctic Marine Transportation, the steering committee for the Government/Industry Annual Environmental Workshop held this year at Montebello, the establishment of a departmental mechanism for review of the upcoming Beaufort Sea Environmental Impact Statement and was involved in the Tempol Review of the Arctic Pilot Project.

The Branch continues to develop program proposals for Arctic oceanography.

Intergovernmental involvement included discussions with German officials on the possibility of joint polar research in oceanography under the Canada/FRG bilateral Science and Technology agreement and interdepartmental discussions on possible arctic collaboration with Japan and the U.S.S.R.

Implementation of the recommendations from the interdepartmental study on Ocean Information Services (1980) have started. A data directory (CAMDI) has been initiated for all OSS held data; it is currently being expanded to include industrial and other data in the marine environment.

In 1981, the Marine Environmental Data Service operated three wave data recorders with the Datawell buoys at Koakoak, Issungnak and Kilannak. The data return from these three installations exceeded 95 per cent.

### **Plans for 1982-83**

The Directorate will continue its role in the groups or committees noted above. It will also be involved in planning Arctic oceanography programs, the EARP Review of Beaufort Sea Production and Transportation, northern and regional land-use planning, the Environmental Studies Revolving Fund Steering Committee and the implementation of the Arctic Pilot Project (Northern Part) recommendations. Work will continue on Ocean Information Systems and the Ocean Climate Program and on the possible elaboration of joint Arctic endeavours with the Federal Republic of Germany, Japan, France, the U.S.A. and the U.S.S.R.

The Wave Climate Study will continue to support drilling activities in the Beaufort Sea, with five waverider systems for Dome Petroleum and one system for Gulf Oil. In the eastern Arctic, two systems will be loaned to Canterra Energy Ltd., for operations in the Davis Strait area.

The Directorate will continue to publish validated scientific evidence from departmental R&D programs in the North and will continue to explore with petroleum companies and their consultants the possibility of publishing results of their studies.

**Canadian Hydrographic Service, OSS**

### **Responsibilities**

The Service conducts hydrographic surveys in northern waters and produces, distributes and maintains up-to-date nautical charts, sailing directions and tide tables of northern waters.

## Review 1981-82

*CSS Hudson*, carrying five survey launches and 19 hydrographic, electronic and mechanical support personnel, was assigned to survey a deep draught (20 m) tanker corridor through an area of the Beaufort Sea known to contain pingo-like features (PLFs). The corridor is 10 nautical miles wide and approximately 170 nautical miles in length. Launches were run 16 hours per day, and overnight the ship ran seismic and side scan coverage through the corridor. Gravity cores and grab samples were also obtained, and six current meters were recovered from the edge of the continental slope for the Frozen Sea Research Group from the Institute of Ocean Sciences. Prior to returning to Bedford Institute of Oceanography, *CSS Hudson* also undertook surveys in the eastern Lancaster Sound area.

In the eastern Arctic, *CSS Baffin* carried out surveys in Fury and Hecla Straits, assisted by the Coast Guard vessel *Labrador*. *Baffin* also completed the route from Fury and Hecla Straits to Hall Beach, and in conjunction with the chartered vessel *Polar Circle* completed surveys for the approaches to Hall Beach and the route from Hall Beach to Roche Bay. In the northern part of Foxe Basin, *CCGS Labrador* completed 50 per cent of the survey of Steensby Inlet.

Coast Guard vessels, *John A. MacDonald*, *Pierre Radisson* and *Louis St. Laurent* were available to CHS on an opportunity basis and worked on the following projects: a) Labrador Coast and Home Bay horizontal control b) survey of Nanisivik wharf c) surveys of Clyde Inlet, Croker Bay and Dundas Harbour.

Several projects were completed on the Labrador Coast and the survey of Koksoak River, Ungava Bay, was also completed. With the support of the Department of Transport, a detailed survey was carried out of the approaches to Chesterfield Inlet.

The 1981 Polar Continental Shelf Project (PCSP) survey operated from a camp established on the west side of Prince of Wales Island. The group worked in conjunction with the Gravity Division of Energy, Mines and Resources and collected 9971 through-ice soundings and 1000 gravity readings in southern McClintock Channel and Larsen Sound. In the Davis Strait area, *CSS Dawson* completed the offshore multiparameter survey as far north as Cape Dyer.

In the western Arctic, four tide gauges were installed in the Beaufort Sea in support of the Hudson '81 project. Tide gauges at Cape Parry and Cambridge Bay were serviced and replaced and work continued on the development of the submersible tide gauge for Arctic use. Tidal work was also carried out in Norwegian Bay and Davis Strait.

Three new Arctic charts were produced and 32 new editions and four reprints were also published. "Sailing Directions, Arctic Canada, Volume III 3rd edition" was also published. During the year, 28 Natural Resource maps covering parts of Labrador, Hudson Bay and High Arctic were completed.

## Plans for 1982-83

The Arctic operations in the Beaufort Sea will be a continuation of the Hudson's 1981 work in the shipping corridor. It is also planned to complete surveys south of Bathurst Island in Parry Channel. Alternatives to this program are a route survey through Victoria Strait or a survey of critical areas in Prince of Wales Strait. It is also planned to complete survey work in southwest Jones Sound and on the Labrador coast in Davis Inlet and the approaches to Nain. In Hudson Bay, surveys will also be undertaken of the approaches to Akulivik in the vicinity of Cape Smith. The PCSP group will carry out through-the-ice sounding of the entire Prince of Wales Strait. Other arctic work will be undertaken depending upon the availability of Coast Guard vessels.

A tidal survey is planned in the Gulf of Boothia and in Jones Sound and preliminary tidal and current studies will be undertaken in Prince of Wales Strait and in Amundsen and Coronation Gulfs. It is expected that 13 new charts of northern waters will be published as well as 13 new editions and two reprints. "Sailing Directions, Arctic Canada, Volume I, 3rd edition" should also be available. In addition, it is expected that 30 Natural Resource maps will be published.

## Summary of Direct Northern Expenditures (000's)

	\$	%
Total Forecast 1981/82	4 119	100.0
<i>Expenditure by Northern Objective:</i>		
Protection of the Environment	3 190	77.4
Quality of Life	377	9.2
Leisure and Recreation	361	8.8
Economic Growth	191	4.6

# Health & Welfare Canada

## **Activities Review, 1981**

Main program areas include the Child and Maternal Health Program, Tuberculosis Control, Communicable Disease Control, the School Health Program (includes School Dental Health), Environmental Health, Mental Health, Health Education (with current emphasis on the community Health Representative Program), Public Service Health, the National Native Alcohol Abuse Program, and Hospital Services.

The provision of dental services continued in 1981-82. Services to remote communities are emphasized, and are provided by dentists located in Dawson City, Faro, and Whitehorse. In addition, ten Dental Therapists in Whitehorse and one in Watson Lake provide services to the entire Yukon Territory.

The Branch continued its membership on the Yukon Water Board during 1981-82. It provided advice aimed at helping to prevent the contamination of municipal water supplies.

The Branch continued to assist and encourage medical specialists in Paediatrics, Orthopaedics, Dermatology, Ophthalmology, Rheumatology, Oncology, Otorhinolaryngology, and Internal Medicine from outside the Yukon to visit and provide clinical services at Whitehorse.

In 1981-82 the Branch continued and expanded the Health Liaison Program with the Council for Yukon Indians. This Program is designed to improve the general health of the Indian people of the Yukon.

The Community Health Representative Training Program is carried out in co-operation with the Yukon Vocational Training Centre, through the Health Education Program. During 1981-82, two trainees completed the Program, bringing to eight the number of Community Health Representatives working at the community level. Four trainees were recruited in 1981, and it is expected that they will complete their training during 1982.

The Environmental Health Program added one Environmental Health Officer to its staff during 1981-82. Environmental Health Officers worked to establish and inspect sanitation facilities in mining and pipeline campsites and carried out general health inspections at these locations. The Branch reviewed and assessed certain communities and established environmental health profiles of them.

The Mental Health Program continued to promote community mental health awareness and involvement, and to help communities respond to mental health and related social problems. To strengthen this Program, one additional Community Mental Health Nurse was added to the staff during 1981-82. Psychiatric services continue on a contractual arrangement with a Psychiatrist, who visits communities every three months. Direct services are provided to both residents and medical personnel within the Yukon.

The staffing of two Area Nursing Officer positions has provided additional assistance to field nurses and cottage hospitals. The Branch has published program guidelines specific to the Yukon Region for Public Health Nurses in the field. Regional staff have updated the Infant Feeding Guide, which is expected to be distributed in 1982.

The addition of a part-time Public Service Health Nurse served to strengthen the Public Service Health Program. A full-time Public Service Health Nurse is planned for 1982-83.

## **Medical Services Branch — Yukon Region**

### **Role**

The Branch's primary responsibility is to administer and deliver health care programs to all residents of the Yukon. It serves as the Territorial Health Department, with the Program Medical Officer acting as Chief Medical Officer for the Yukon Territory. The Branch co-ordinates the provision of medical and dental clinical services to remote communities.

The Medical Services Branch and the Yukon Territorial Government share the cost of providing health care. The latter administers the Health Care Insurance Plan and contributes, accordingly to a cost sharing formula, to the capital and operating costs of the health care system. A Health Co-ordinating Committee was formed during 1981 with equal representation from the Medical Services Branch and Department of Health and Human Resources, Yukon Territorial Government.

### **Facilities**

The Branch operates one General Hospital, three Cottage Hospitals, two Nursing Stations, ten Health Centres, and four Health Stations.

Marked development of the National Native Alcohol Abuse Program occurred in the Yukon during 1981-82. A strong Advisory Board was formed and the number of programs was increased to eight. During 1981, a NNAAP Consultant was hired, and a strong program plan was established in anticipation of an expanded National Native Alcohol Abuse Program for 1981-82. All programs during 1981-82 operated at the community level.

The Whitehorse General Hospital is an accredited 120 bed acute care facility. It provides services in medicine, surgery, paediatrics, obstetrics, gynecology, psychiatry, pharmacy, radiology, physiotherapy, as well as emergency and laboratory services. The Hospital is a resource and referral centre for all health facilities in the Yukon. During 1981-82, it extended its programs by providing a comprehensive Parental Nutrition Program and a Home Haemodialysis Program. The Dietary Department provided consultative services to the Yukon Correctional Institute and the Macauley Lodge, and the medical and radiology staff have initiated continuing education in preparation for the use of an Ultra-sound Unit. This Unit will be in service in 1982-83.

#### *Maintenance and Construction*

A new Health Centre at Haines Junction was completed during 1981-82, and the Nurses' Residence at Haines Junction was renovated. Other work at Regional Headquarters enabled the consolidation of Administrative and Program staff. Renovation of the Laundry Department of the Whitehorse General Hospital was completed. Planning for a new Nurses Residence for Carmacks was started; construction will begin in the summer of 1982.

### **Northwest Territories**

#### *Roles*

As in the Yukon Territory, the Medical Services Branch is responsible for providing acute treatment care and preventive health services to the population of the Northwest Territories, except in Yellowknife, Hay River and Fort Smith. In these centres, the Territorial Department of Health provides acute treatment care. That Department is also responsible for administering the Territorial Hospital Insurance Services Plan, the Territorial Health Care Plan and supplementary health programs. The N.W.T. Government, under a contractual agreement, provides the Medical Services Branch with support services in finance and administration.

#### *Facilities*

In the Northwest Territories, the Branch operates four hospitals — Frobisher Bay General (35 beds), Inuvik General (55 beds), and the cottage hospitals at Fort Simpson and Rae-Edzo. In addition, the Branch operates 39 Nursing stations, 8 Health Centres and a number of Health Stations. The Nursing Stations are particularly well equipped. They provide treatment and public health services through a staff of Nurse Practitioners who, apart from their basic RN qualifications, have taken training in public health and mid-wifery. They also have expertise in diagnosis and treatment. Physicians from the Base Hospitals visit these Nursing Stations regularly.

A number of universities, including McGill, Manitoba, Alberta and the Clarke Institute of Psychiatry in Toronto, provide specialist services.

Private and government dentists, as well as dental therapists provide dental service to N.W.T. communities. Dental therapists receive their training at the Branch's School of Dental Therapy in Fort Smith.

#### *Activities Review 1981-82*

The Branch decided to begin discussions with the N.W.T. Government and the Inuit Tapirisat of Canada on a possible contractual arrangement under which the N.W.T. Department of Health would operate the Frobisher Bay General Hospital. This arrangement would see the hospital operating under a Regional Board of Management, as opposed to the present Hospital Advisory Board. The Hospital was re-accredited by the Canadian Council on Hospital Accreditation in August 1981.

The Inuvik General Hospital Board continued to assume increased responsibility for operating that facility. A restructuring of the Advisory Board was completed in March 1982. The reorganization of the Inuvik General Hospital is now essentially complete with hiring of a Medical Programs Officer, a Finance and Administration Officer, and a Hospital Administrator.

The likelihood of the implementation of large-scale resource development projects in the Western Arctic, with their attendant major work forces, has indicated the need for Medical Services Branch involvement in the project planning process. Regional Branch officials are working with the Department of Indian and Northern Affairs in this context.

Preliminary studies have also been completed on the future role of the Inuvik General Hospital in view of this expected resource development. The N.W.T. Territorial Council Health Services Study of the Inuvik Region will be completed in April of 1982.

A task force on Health Services and Policy Co-ordination, with representation from the N.W.T. Government, the Department of Indian and Northern Affairs and Health and Welfare Canada, is reviewing the recommendations of two health studies covering the central Arctic and Keewatin. The Task Force will report its findings in the fall of 1982.

The restructuring of the Tuberculosis and Chronic Disease Unit in Edmonton has been completed with the appointment of a Medical Director. The Tuberculosis Manual has been completed and distributed to all field units. Tuberculosis rates continued to decline during 1981.

The Medical Services Branch has taken a number of initiatives to encourage native people to become involved in the health service. For example, a number of native persons have been trained through the Northern Careers program, and a liaison worker with the Dene Nation has been hired in Yellowknife. The Branch is also continuing to encourage native groups to participate in various activities of the region including Zone Directors' Conferences.

The Dental Health Treatment Program, except in those communities having either a resident dental therapist or a preventive program, continues to remain oriented to treating emergency cases.

The Community Health Representative Program in the N.W.T. has been curtailed because of a lack of funding. Six major projects within the National Native Alcohol Abuse Program were operating in the N.W.T. during 1981.

#### *Maintenance and Construction*

The Department of Public Works has surveyed all hospitals and other buildings associated with providing medical care in the Northwest Territories. Many of these facilities need to be replaced, and the Department has worked to ensure that the present buildings have been renovated or repaired so that they are safe for patients and staff.

The nursing station at Holman Island was completed in the spring of 1982.

The Cape Dorset Nursing Station will be completed in the summer of 1982.

#### **Summary of Direct Northern Expenditures (000's)**

	\$	%
<i>Total Forecast 1981/82</i>	76 584	100.0
<i>Expenditure by Northern Objective:</i>		
Quality of Life	76 584	100.0

# Department of Indian Affairs & Northern Development



Eskimo artist preparing a stone block. This block is used in the production of the famous Eskimo prints.

## Northern Program

### *Responsibilities*

Northern Affairs program activities include the management of northern resource development, the protection of the environment, the preservation of native languages and cultures, and the political evolution of the northern territories.

### Policy and Programming Branch

Northern Policy and Programming provides the focus within the department for interdepartmental efforts to co-ordinate federal and territorial policies and programs affecting the North. In addition, it has particular responsibilities for policy development and evaluation, northern research, and special social, cultural and economic development programs for northern Inuit.

### Northern Policy Directorate

#### *Responsibilities*

The Northern Policy Directorate provides a strategic framework within which policies for the north are developed to ensure that they are integrated into and consistent with the government's overall objectives for the north.

The directorate comprises four divisions which with their respective responsibilities, are indicated below.

#### Policy Division:

The Policy Division identifies emerging policy issues and develops related policy options and recommendations.

#### Planning Division:

Established in 1981, the Planning Division directs and coordinates the planning process in the northern Program, analyzes program plans, manages and co-ordinates program policy and strategy, and provides advice on planning matters.

#### Native Claims Division:

Formed early in 1982, the Division co-ordinates Program inputs to the native land claims negotiation process and provides advice to management on the policy, program and operational implications of concessions made to native groups.

#### Coordination Division:

This Division, provides staff support to interdepartmental advisory committees, prepares and publishes the Annual Northern Expenditure Plan and Government Activities in the North. The Division also maintains a co-ordination and liaison function with other north-oriented government departments and agencies relating to policy initiatives impinging on the North.

The Toponymic Unit coordinates the naming of geographic features in the North and on Indian reserves and represents departmental interests on the Canadian Permanent Committee on Geographical Names.

## Northern Coordination and Social Development Directorate

### *Territorial Relations Division*

The Division continued to monitor constitutional development in the two Territories.

De facto responsible government was introduced in the Yukon in the fall of 1979. Since then, control and administration of the Territorial Government has been by an elected Executive Council, functioning with most of the powers of provincial cabinets. The Commissioner's role is similar to that of a Lieutenant Governor in the provinces. The Territory has assumed a more autonomous voice in federal-provincial conferences.

The question of division remains the major constitutional topic of the Northwest Territories. The Unity Committee Report was accepted in November 1980 and recommended that a territorial plebiscite on division be held within two years. Accordingly, a Special Committee on the Impact of Division was formed to develop a report and inform the N.W.T. public about the implications of division. In October 1981, the Government of the Northwest Territories published a discussion paper intended as the first stage in developing a consensus on division. The paper addressed the question of political development in the N.W.T. and, together with the Report on Impact, was intended to form the basis of an information campaign on division.

In November, the Dene Nation put forward its proposal for the creation of a Denendeh territory out of the western N.W.T. The Denendeh paper and the paper published by the Government of the Northwest Territories formed the basis of a conference held in January 1982, attended by all major native groups and community leaders. This conference resulted in the creation of a Constitutional Working Group. Its purpose was to negotiate constitutional reform with the federal government and to initiate political and administrative reform within the N.W.T.

In December 1981, the N.W.T. Legislature passed a Plebiscite Ordinance, which called for a plebiscite to be held in April 1982, asking all persons who had lived in the territory for at least three years, the question: "Do you think the Northwest Territories should be divided?" While 56% of the votes cast favoured division, the Ordinance does not bind the N.W.T. government to the plebiscite results. In May, the N.W.T. Legislature passed a motion to request the Federal Government to create (in consultation with them) a Federal Boundaries Commission which would by the spring of 1983 "... recommend the exact boundaries of the new territory". This matter and all others concerning future directions in the North are under consideration by the federal cabinet.

### *Review of 1981-82*

The responsibility for Mining Safety Inspection was transferred to the Territorial Government effective June, 1981.

### *Plans for 1982-83*

The Division co-ordinated preparation of Federal-Territorial Financial Agreements covering fiscal year 1982-83 for both territories.

## *Northern Social Research Division*

### *Responsibilities*

The Division plans, conducts and sponsors research. It supports both the training of northern scientists by Canadian universities through the Northern Scientific Training Grants Program, and through the Association of Canadian Universities for Northern Studies. The Division also provides the Department and the territorial governments with analyses of social, economic and technological developments in the foreign North and administers a program for scientific resource centres in Canada's North. The objectives of this program are to expand the amount of scientific work done in the North and to develop more scientific expertise there.

### *Review 1981-82*

The Division's research related primarily to problems of social change for native people in the North. Much of this work was done under contract by university scientists and others. Division officers supervised and co-ordinated programs in northern demography and reported on the social, economic and technical aspects of offshore drilling activities in the foreign North, and native land claims in Alaska.

The Division provided funding to the Association of Canadian Universities for Northern Studies, which held its fourth annual meeting at the University of Calgary.

Last year was the twentieth year of the Northern Scientific Training Grants Program. Grants totalling \$525 000 were awarded to provide northern experience to scientists-in-training.

Grants were made to the following organizations affiliated with the universities as indicated in brackets: Committee on Arctic and Alpine Research (British Columbia), Boreal Institute for Northern Studies (Alberta), Committee on Northern Studies (Manitoba), Institute for Northern Studies, (Saskatchewan), Committee for Arctic and Sub-Arctic Research (Toronto), Northern Research Group (Ottawa), Northern Research Committee (Western Ontario), Presidential Committee on Northern Studies (McMaster), Centre for Northern Studies and Research (McGill), Centre for Research in Labrador (Memorial), Committee on Northern Studies (York), Groupe de recherches nordiques (Montréal), Centre de recherches sur le Moyen-Nord (Québec à Chicoutimi), Centre d'Etudes nordiques (Laval), Centre d'Ingénierie nordique (Ecole Polytechnique, Université de Montréal), committee on Northern Studies (Waterloo), Committee on Northern and Native Studies (Carleton), Northern Studies Group (Calgary), Northern Studies Committee (Trent), Northern Studies Group (Windsor), Northern Studies Group (Queen's), Centre de la Recherche et des Etudes Avancées (Trois-Rivières).

The Division operated the Northern Scientific Resource Centre at Inuvik. This laboratory, opened in 1963 provides general laboratory and other facilities in the Mackenzie Delta region for research in a variety of disciplines. Another Northern Scientific Resource Centre, at Igloolik, supports research in the eastern Arctic. Work continued on establishing a Science Institute in the North. This work is in response to the growing concern of northerners that research should be more responsive to their social and economic needs and that research on the North should be carried out in a northern institution.

### **Plans for 1982-83**

The Division will continue to administer programs that support northern science and research. It will continue to support the Northern Training Grants Program and the Northern Resource Centres. It will also continue to provide core-funding to the Association of Canadian Universities for Northern Studies and will implement the proposed Northern Science Institute. The Division will also carry out specific research, such as a study of demographic effects of the Norman Wells Pipeline.

Some preliminary work on the development of a northern science policy will be carried out. The initial tasks will be to determine the major objectives and goals for scientific activities in the North and to examine their relationship to the national objectives for the North and to the pace of northern development. The Division will also review the northern scientific and technological work supported by federal departments and agencies. This work will be co-ordinated with federal departments, territorial governments, industry, universities, native associations and other groups.

The Circumpolar Affairs Group will continue to monitor and assess the socio-economic, political and technical developments in the foreign North in terms of their relationship to northern Canada. The Group will also advise on policy matters relating to the Northern Program.

### **Social and Cultural Development Division**

#### **Responsibilities**

The Social and Cultural Development Division administers programs relating to the social and cultural development of Inuit and other northern native people. The Division has five Sections: Native Liaison, Inuit Art, Culture and Linguistics, Vocational Training and Loan Fund and Administration.

The Native Liaison Section provides a link between the federal government and the northern native people. It arranges funding for groups to research, develop and negotiate their land claims; it also enables native groups and the federal government to consult on northern development issues.

The Inuit Act Section is the central agency concerned with all aspects of Inuit art. It provides professional assistance to art-producing co-operatives. In particular, it has worked with the Canadian Arctic Producers Co-operative and La Fédération des Coopératives du Nouveau Québec to develop markets for northern arts and crafts.

It conducts research and prepares publications, including a newsletter, "About Arts & Crafts" and provides information to institutions and the public. The Section also carries out a national and international exhibition and lecture program.

The section has Category "A" designation under the Cultural Property Export and Import Act, allowing it to receive donations of certified Inuit artworks.

The Canadian Eskimo Arts Council, appointed by the Minister, provides advice on the orderly development of Inuit arts and crafts. The Council helps artists to protect their work through copyright.

The Culture and Linguistics Section provides translation services in a variety of Inuktitut dialects and orthographies, publishes a quarterly magazine, "Inuktitut" and administers a grants program that enables Inuit to participate in a wide range of cultural activities. The Section sponsors projects involving Inuit-made films, Inuit broadcasting and literature and language development. The Section also carries out the Department's funding and liaison activities in connection with the Inuit Cultural/Education Centres in the N.W.T. and Labrador.

The Vocational Training Section provides counselling services to northern native students in southern Canada and operates Inuit House in Ottawa. It administers an on-the-job training program to increase northern native employment, provides apprenticeship training and arranges special training programs for northern native people.

The Loan Fund and Administration Section provides a number of special services and is responsible for policy relating to the Eskimo Loan Fund. It also co-ordinates the Fund with associated financial assistance programs. This Section also administers a five-year Co-operatives Development Program.

#### **Review 1981-82**

No new native claims were accepted for negotiation during the year from native claimants in either the Yukon, Northwest Territories or Labrador. Of the six active claims for negotiation, three are in the N.W.T., and one is in Yukon.

The Council for Yukon Indians has continued negotiating its claims and has signed more than 15 related supplementary agreements with the federal government. Final agreement-in-principle is expected by the spring of 1982.

The Dene and Métis held a preliminary negotiating session, but further negotiations were broken off, pending broadening of the federal position on constitutional development in the Northwest Territories.

Final settlement of the Committee for Original Peoples Entitlement claim is still delayed; negotiations on this claim have not been pursued since January 1981.

Inuit Tapirisat of Canada concluded an agreement-in-principle on wildlife matters, but further negotiations were delayed pending approval by all federal departments.

In the meantime, the Labrador Inuit Association continued to formulate a specific land claims proposal.

The Division began work on a number of projects relating to the conservation of barren-ground caribou, particularly the Kaminuriak and Beverly herds. These projects have resulted in an inter-governmental agreement leading to native participation in an interjurisdictional program for managing the herds.

An active program of support for Inuit art included exhibitions, publications and public information programs.

Major works of sculpture were shown at the Prince of Wales Northern Heritage Centre in Yellowknife, and a display accompanying an educational program featuring northern games was arranged in co-operation with the National Museum of Man. A brochure explaining the use of the Canada Eskimo Art Mark was published for wide distribution by the Inuit art marketing co-operatives.

The Anik B communications project of Inuit Tapirisat of Canada (ITC) and Tagamiut Nipingat Inc. (TNI) of northern Quebec were successfully concluded. Contributions of up to \$3.9 million were approved to support an Inuit television broadcasting service over two years.

Three issues of Inuktitut magazine were published including a special issue on Inuit education. The Division, in co-operation with ITC, also published an information handbook for Inuit living in southern Canada.

Extensive field work in Inuit communities in northern Quebec was carried out to revise a major Inuktitut dictionary. During the year, the Department, in co-operation with the Inuit Cultural Institute (ICI), again sponsored workshops on Inuktitut terminology for Inuit translators.

Over 175 northern native people participated in on-the-job training programs during the year. Carpentry apprentices gained practical experience by constructing a home at Baker Lake, N.W.T. for the Northern Affairs Program. Special training courses were conducted in syllabic touch typing, and ongoing programs to train aircraft pilots and mechanics were evaluated.

During the year, the Vocational Training Section provided counselling services to more than 150 northern native people.

Through the Eskimo Loan Fund, more than \$600,000 was lent to 15 Inuit and Inuit-controlled business. An additional \$1.7 million was paid in economic development contributions. The five-year Co-operative Development Program entered its final year.

The Program's objectives are to establish financial stability and develop better management skills for northern co-operatives. The N.W.T. and northern Quebec co-operatives did \$32.7 million in business and paid more than \$9.1 million to northerners in wages and other payments. The evaluation of the northern socio-cultural effects of the program was completed, as was the monitoring and assessment of the consolidated financial results of the northern co-operatives.

#### ***Plans for 1982-83***

An agreement was reached between federal, provincial and territorial governments and various native groups on joint management of the Beverly and Kaministiquia caribou herds. As a result of this agreement, the Division will continue to fund a community information and education program. The Division will also fund northern native groups thus enabling them to consult with the federal government, resource developers and other agencies on matters related to northern development.

On the recommendation of the Canadian Eskimo Arts Council, a conference for curators and other specialists will be held to encourage research into and exhibition of Inuit art. A free flow of information will be encouraged among museums, galleries and similar institutions. Inuit art marketing agencies will be encouraged to direct their activities toward western Canadian and foreign markets.

The Division will continue to foster Inuit television and broadcasting and will work to increase the amount of Inuktitut programming. Specialized Inuktitut lexicons for Inuit translators will continue to be developed. A comprehensive Inuktitut-English dictionary will be prepared for publication in co-operation with the Government of the Northwest Territories and Inuit cultural associations. Projects to encourage Inuit literature and music will continue. Inuktitut magazine will publish special issues on the western Arctic and Inuit performing arts.

The Division will complete the evaluation of the Co-operative Development Program and will recommend the directions that assistance to the Northern co-operative systems should take in future.

## **Major Projects Assessment Directorate**

### ***Responsibilities***

The Directorate is the focal point for the planning, public review, assessment and post-permit responsibilities for all hydrocarbon transportation proposals north of 60 degrees. It co-ordinates assessment and review activities both within the Department, and between the department and territorial governments and other federal departments and agencies. The Directorate is also the base for the Interdepartmental Policy Committee for major resource development projects in the North. There are three Divisions: Planning, Assessment and Public Review.

### ***Review 1981-82***

Public reviews of the environmental and socio-economic aspects of the Arctic Pilot Project and Beaufort Sea developments were carried out in co-operation with the NEB and FEARO, respectively. The Directorate made available funds totaling \$450 000 to help native and northern interest groups participate in these reviews. The Directorate also headed the development of a government strategy for hydrocarbon development in the North in the 1980's and developed "Planning Guidelines" for major northern resource development projects. The Norman Wells Project was approved; a Project Management team was formed to implement the Cabinet decisions and, in February 1982, an Interim Project Coordinator was appointed. The Department carried out its ongoing responsibilities in the Yukon for the Alaska Highway gas pipeline through liaison with the Northern Pipeline Agency.

### ***Plans for 1982-83***

The Directorate will carry forward the co-ordination and development of government plans for dealing with hydrocarbon development, particularly in the Beaufort Sea and High Arctic. It will continue providing funds to assist native and northern interest group interventions in public reviews of northern hydrocarbon development proposals. The Directorate will also take the lead in preparing the Department's response to the applications by the Arctic Pilot Project and the TransCanada Project to transport liquefied natural gas. The Directorate is preparing a publication that will provide a broad audience of Canadians with an overview of the oil and gas exploration activities of the Beaufort Sea-Mackenzie Delta region. The publication will explain how these activities have affected the region's people and environment.

## **Lancaster Sound Regional Study**

### ***Responsibilities***

The Lancaster Sound Regional Study evolved from the 1978 Public Hearings to examine an application by Northern Petroleum Limited for permission to drill an exploratory well in Lancaster Sound. The Federal Environmental Assessment and Review Process Panel, convened to conduct the hearings, concluded that a meaningful assessment of the Environmental and Socio-Economic impacts of exploratory drilling in Lancaster Sound could not be made in isolation from the broader issues that affect all uses of the area. The Panel recommended that the Department of Indian Affairs and Northern Development should undertake a comprehensive review of the complex resource use problems of the Lancaster Sound Region.

Accordingly, DIAND set up the Lancaster Sound Regional Study to initiate comprehensive planning for the future of the region. A Steering Committee and Working Group drawn from five federal departments and the Government of the N.W.T. was established. The Working Group assembled a data base that summarized all of the physical, environmental and socio-economic information available. The Group then synthesized this information and analyzed the issues bearing on regional planning. A draft green paper was produced, which was released by the Minister, DIAND, in February 1981.

#### **Review 1981-82**

A thorough public review of the draft green paper followed. Community meetings in Pond Inlet, Arctic Bay, Resolute, and Grise Fiord, and workshops in Resolute and Ottawa enabled all interested sectors of the public to respond to the questions and issues raised in the paper. Participants in these discussions all agreed on the necessity of involving local residents in long-term regional planning, and in clarifying the uncertainties shared by Inuit and industry. These uncertainties arose from the unsettled Nunavut land claim and the lack of broad government policies for the North. The report by the Chairman of the public review phase, Professor Peter Jacobs of Montreal, entitled "People, Resources and the Environment", was published and released in June 1982.

A final green paper was published in May 1982, and the revised data atlas, a month later. The paper drew on both updated information and the public's comments and recommendations. It also discussed the effects of national policies and current initiatives on the future of the Region. Specifically, the paper covered the process for negotiating land claims, a series of options for possible future uses of the region's resources and various strategies for beginning a regional planning process for Lancaster Sound that would be in harmony with the Department's land use planning policy.

#### **Plans for 1982-83**

Public comment on the final green paper will be compiled, and a study session and workshop will be held in the Lancaster Sound region in the fall of 1982 to enable Inuit to respond to the green paper. (All Lancaster Sound publications are published in Inuktitut, as well as in English and French.) The public response to the green paper will contribute to land use planning in the region and will help to narrow the range of options before any final decisions are made on the future use and management of the region's resources.

### **Northern Environment**

#### **Land Management Division**

##### **Responsibilities**

The Division administers surface rights and environmental regulations for 3.9 million square kilometers of northern Crown lands.

#### **Review 1981-82**

On February 9, 1981, the Yukon Government accepted responsibility for controlling recreational lands consisting of some 45 campgrounds and 900 cottage lots in the Yukon. During the year, legal descriptions of the transfer areas, and referrals to the Council for Yukon Indians were completed, and Order in Council transfers were executed.



Views of Arctic Freightier "Kakawi" unloading in harbour at Resolute Bay, Cornwallis Island, N.W.T.; iceberg in foreground. Photo by George Hunter - 1974.

Revisions to the Territorial Lands and Public Lands Regulations were completed during the year. The Territorial Quarrying Regulations were also revised, but had not been finalized by year's end. The Land Titles Repeal Bill which received first reading in January 1981, did not proceed to second reading during 1981-82.

Division personnel continued to provide special information to claims negotiations north of 60°, and participated in several negotiation sessions.

The Division received and processed more than 460 applications for land use permits for exploration and development in the Yukon and Northwest Territories. Permits were issued for such operations as road construction, mineral exploration, petroleum exploration, campsites, quarrying and land clearing. In 1981, quarrying permits authorized the removal of 1 569 000 cubic yards of sand and gravel in the Northwest Territories and 1 125 000 cubic yards in the Yukon. In addition, large quantities of material were excavated to construct artificial islands for drill-rigs in the Beaufort Sea.

The report of the Interdepartmental Working Group on the International Biological Program (IBP) *Ecological Sites in Polar Bear Pass* was released for comment September 18, 1981.

The Resource Inventory and Analysis Program, under the Canada — Yukon General Development Agreement signed in 1977, was implemented under a Subsidiary Agreement in 1979. This was the third year of a four-year program to expand information on the resources of the Yukon Territory. Total cost of the program is estimated at \$2.4 million.

#### **Plans for 1982-83**

Collaboration with the Yukon Government on the implementation of a Yukon agricultural policy is expected during the year.

Revisions to the Territorial Quarrying Regulations should be completed in 1982-83. These revised Regulations, together with the revised Territorial Lands and Public Lands Regulations, should provide an effective legal framework for managing both offshore as well as onshore lands.

Grants of easement for the Alaska Highway Natural Gas Pipeline and the Norman Wells Pipeline, and Easement Agreements for both these lines should be completed in 1982-83.

The Division will continue to be involved in land claims negotiations in 1982-83, at a pace dictated by the number and progress of comprehensive claims negotiations.

Final recommendations on Polar Bear Pass are expected to go to the Minister in the spring of 1982.

#### **Land Use Planning Branch**

##### **Responsibilities**

The Land Use Planning Branch, Ottawa, provides technical and professional assistance to the regional planning offices of the Department. It co-ordinates the involvement of other federal agencies in land use planning in the North and, as required, provides advice to the Minister and the Northern Land Use Policy Committee.

##### **Review 1981-82**

In July 1981, the Minister, DIAND, announced that Cabinet had approved a new policy for Northern Land Use Planning. This policy called for the establishment of a planning system in the North, under DIAND leadership. Various federal departments, territorial governments, native organizations and others will participate in developing the system. The planning system centres on the creation of Northern Land Use Planning Commissions in each Territory. The Commissions will be responsible for developing comprehensive land use plans, beginning with priority areas such as the Beaufort. The policy's objective is to create a systematic, open process for planning and co-ordinating the use of northern land and resources while avoiding or resolving conflicts.

Treasury Board Program approval has been received and work is underway to develop the necessary administrative mechanisms. The Department is soliciting input from all federal and territorial government departments with interests in land use planning in the North, and from industry, native organizations and various interest groups, to determine priority areas for planning.

##### **Plans for 1982-83**

The Northern Land Use Planning Program is expected to be fully implemented for 1982-83 with Land Use Planning Commissions established in each Territory. Initial planning will begin in priority areas, including the MacMillan Pass/Howards Pass Region, the Beaufort/MacKenzie Delta, the MacKenzie Valley and Landaster Sound.

#### **Forest Resources Division**

##### **Forest Fire Management Program**

##### **Responsibilities**

This Program plays an important role in the management of northern renewable resources. It provides fire protection to communities, power transmission and communication networks. It is responsible for managing recreation and timber areas, watersheds, erosion-prone sites and wildlife areas adjacent to communities and used by the residents as a source of food.

##### **Review 1981-82**

Cabinet approved a new fire management policy, which the Division implemented. The policy is based on recommendations of the Forest Fire Review Panel, which submitted its report in 1980. One of the main features of the policy is the establishment of a Fire Attack Zone (FAZ) and an Observation Zone (OZ). All fires in the FAZ receive immediate, full attention. If the fire cannot be contained within the Zone, a decision is made whether to continue fighting the fire, attack a portion of it, or allow it to burn itself out. Fires in the OZ are generally not fought, but the policy allows flexibility. Guidelines have been approved that specify how particular kinds of fires should be dealt with.

The Panel made a second major recommendation: to increase community involvement in the management of the Program. Accordingly, community fire councils were formed which helped to delineate the FAZ. A N.W.T. Fire Management Program Committee was also established, involving Dene and Métis members from a number of communities in the Mackenzie Valley. As well, the Rae-Edzo Band was awarded a contract to supply firefighters and fire-fighting services in their immediate area.

Although the new policy covers both the Yukon and N.W.T., no Fire Management Committee has been established in the Yukon.

The Division has had difficulty in implementing the new policy in the Northwest Territories because of the drought which has caused serious forest fire problems in the South Mackenzie Region for the past two years. One particularly dangerous fire, HY49, forced the evacuation of one community and threatened two others. It burned over 625 000 ha and cost almost \$1 million. A total of 310 fires have burned 976 060 ha in the N.W.T. In the Yukon, 35 242 ha were destroyed by 91 fires. Total firefighting expenditures were just under \$20 million in 1981, compared to just over \$20 million for the 1980 fire season.

##### **Plans for 1982-83**

During the coming year, the initial fire-attack program will be strengthened and the ability to detect fires will be improved. A few fire towers will be built in high-risk areas, and the area covered by electronic lightning detectors will be enlarged. As well, a network of automatic weather stations will augment the existing, conventional stations.

### **Responsibilities**

The Forest Resource Management Program covers the forest resources of the Yukon and the Northwest Territories. The Program's primary objectives are to maintain a continuous supply of wood for the growing economy of the North and to create jobs for northern residents.

### **Review 1981-82**

During the year, the Department began to evaluate the Forest Resource Management Program. The evaluation includes an assessment of the extent to which the forests will be able to satisfy the demand for forest products at local and territorial levels while providing opportunities for local employment and income.

The Division has prepared detailed maps of forest types around a number of settlements in the Yukon and N.W.T. In Yukon, the Division has almost completed a Fuelwood Management Plan for the Whitehorse area. The demand for fuelwood has risen sharply in that area in the past few years.

The Division is continuing to compile data on sample plots within the Liard Forest Management Unit in the N.W.T.

Other forest management activities in the regions include a stem-analysis project in the Trout Forest Management Unit in the N.W.T. and regeneration surveys in cut-over areas in the Yukon. The Division continues to co-operate with the Pacific Forest Research Centre on a number of regeneration plots near Watson Lake.

The Territorial Timber Regulations are being thoroughly revised, and a number of sections to the Forest Inventory System to be used in the North are also being developed. The photo interpretation section has been completed with the metric mapping standards; the forest classification and the large scale photo sampling sections have almost been completed.

Forest production in the N.W.T. for 1980-81 was 54 294 cubic metres of lumber, fuelwood and roundwood, which was a slight increase over the 1979-80 levels. The Yukon experienced a sharp drop in production from 158 257 cubic metres in 1979-80 to 57 627 cubic metres in 1980-81. A depression in lumber exports caused Cattermole Timber Ltd. to curtail production. The effect of weak export markets was not felt in the N.W.T. because production there is for the local market.

### **Plans for 1982-83**

In the Yukon, the Division will complete the Fuelwood Management Plan. It will continue its work on detailed forest-typing around communities, and on regeneration surveys and routine forest management activities. In the N.W.T., a few blocks of timber will be surveyed for sawmill operators and work will continue to compile data on sample plots within the Liard FMU. As well, the Division will photograph two blocks of timber from the air for subsequent evaluation.

The Division will also complete a revision of the Territorial Timber Regulations and an evaluation of the Forest Management Program. Work will continue on the documentation of the Forest Inventory System.

### **Responsibilities**

The Division is responsible for protecting and managing the inland waters of Yukon and the N.W.T. and the waters adjacent to the mainland and islands of the Canadian Arctic. It controls the use of land and water for hydropower developments on federal lands south of 60°. The Division carries out these responsibilities under the Northern Inland Waters Act and the Arctic Waters Pollution Prevention Act (for non-shipping activities).

### **Review 1981-82**

A three-year study culminated with release of the "Mackenzie River Basin Study Report".

The Division began full-scale studies of the water and related resources of the Yukon River Basin as a prelude to comprehensive resource utilization plans for the Basin.

A study of the hydropower potentials of 25 sites on the Horton, Hornaday and Anderson Rivers in the N.W.T. was completed.

The history of the Arctic Waters Pollution Prevention Act was reviewed.

Offshore environmental regulatory activities and the monitoring of Beaufort Sea drilling activities continue as a major part of the Division's responsibilities.

The Division gave Esso and Dome approval to construct a number of artificial islands in the Beaufort Sea.

### **Plans for 1982-83**

The Division will be developing an inland water management policy for the North. Proposed amendments to the Northern Inland Waters Act are expected to go to Cabinet for consideration. The Division will also begin to develop an Arctic waters management policy. Proposed amendments to the Arctic Waters Pollution Prevention Act will be presented to Cabinet for consideration. The Division will implement the recommendations of the Mackenzie River Basin Study and will work to develop the federal position on regulating the flow and quality of water moving across territorial and provincial boundaries.

The Division will continue to participate in the Yukon River Basin Study and to develop an inventory of hydro power for rivers in the North.

Finally, the Division will continue to play the key role in implementing the Government's Arctic Seas Contingency Plan.

## Northern Environmental Protection Branch

### **Responsibilities**

The Branch co-ordinates, develops and recommends policies, strategies, plans and regulations for protecting the environment in the Yukon, N.W.T. and adjacent offshore regions. It sponsors applied research to support this role.

The Branch develops policies for assessing the impact that northern development and engineering projects have on the environment. It recommends the kinds of research that would be most appropriate for the North and serves as the link between the Northern Program and the Federal Environmental Assessment and Review Office.

### *Environmental Assessment Division*

#### **Review 1981-82**

The Division prepared comments on both the draft guidelines for the Beaufort Sea Environmental Impact Statement and the Environmental Protection Plans for Foothills Pipe Line's Alaska Highway Gas Pipeline Project. The Division reviewed Foothills Pipe Line's Routing Alternatives, assessed part of the Alaska Highway Gas Pipeline Project and participated in the EARP public hearings associated with the Project.

The Division also provided advice and assistance to Regional Environmental Review Committees; environmental advice and input to the Northern Roads and Airstrips Division for the North Canol Road Initial Environmental Evaluation; advice to the Northern Program on the environmental regulation of the Norman Wells to Zama (Alberta) pipeline and advice on caribou and other environmental issues to Headquarters and the Regions. The Division participated in the I.T.C. Land Claims negotiations and in the initiation of a native wildlife harvest study in the Keewatin.

#### **Plans for 1982-83**

The Division will begin a review of the Beaufort Sea Hydrocarbon Development Environmental Impact Statement and continue to assess Foothills Pipe Line's Environmental Protection Plans. It will also assist in a major review of the Keewatin caribou regulations. Environmental terms and conditions for the Esso Norman Wells project will be finalized during the 1982-83 period.

In view of the increasing mineral development in the South Nahanni River Basin, the Division will carry out an environmental overview of this area.

The Division will continue to advise headquarters and the regions on land claims, native wildlife harvest studies and on matters relating to other activities of the Program.

### *Environmental Studies Division*

#### **Review 1981-82**

Experimental and survey work on the disposal of drilling fluids was completed this year. A fourth volume in a series of reports on this project was published detailing the toxic effects of drilling fluids on vegetation in the High Arctic. Finalization of the study will include reports on biological changes adjacent to drill sites in the Mackenzie Delta and the northern Yukon.

Work on nutrient loading and its implications for recreational and other development capacity of northern lake basins continued at Schefferville, Québec. Results from this study, which is going into its last year of field work are now being used in the Territories.

Compilation and publication of the series of Ecological Bibliographies on the Arctic Islands Archipelago continued.

Crude oil spills data from completed studies in the Mackenzie Valley were examined to shed more light on long-term degradation processes and effects.

Studies to assess the effects of vehicles on the land were completed in the eastern Keewatin.

The Division began a study to enable the development of a hydro geologic model of the effects of uranium mine tailings on a permafrost environment. Preliminary field work is complete and basic data have been compiled.

This year, the Division also began to analyze the data from a survey of uranium mineralization areas in the Keewatin. The study will establish pre-mining background data on radionuclides occurring naturally in the vegetation, and in soils and sediments adjacent to, and far away from uranium mineralization.

Two handbooks containing environmental guidelines are being prepared. One covers mineral exploration and extraction activities; the other recommends procedures for operating pits and quarries.

#### **Plans for 1982-83**

The study on nutrient loading and development capacity of lakes is expected to be completed.

The Ecological Bibliographies Series will be continued.

The two studies of uranium mining will be continued. A study will be started on the role of lichen-radionuclide interactions in the lichen-caribou-man food chain in the Keewatin.

### *Offshore Environment Division*

#### **Review of 1981-82**

The Division continued to participate in the Eastern Offshore Marine Environmental Studies (EAMES) through its membership on the EAMES Management Committee and Advisory Board. The Division supervised the production of several reports combining the results of environmental studies from the EAMES Program in the Northern Baffin Bay and Lancaster Sound region. Membership was maintained in the Offshore Labrador Biological Studies (OLABS) Management Committee.

Further environmental activities in the eastern Arctic involved the Baffin Island Oil Spill (BIOS) project and the Arctic Pilot Project (APP). The Division participated in BIOS Management and Technical Committees by financially supporting the project studies, and by co-ordinating the study of hydrocarbon fate and effects on plants and animals dwelling on the ocean floor. The Division reviewed the Integrated Route Analysis of the APP and continued to advise on environmental issues relevant to the route selection. Also, the Division participated in the Kativik Environmental Advisory Committee for northern Québec and in the work of the Arctic Marine Oil Spill Program (AMOP) Management Committee.

The Division presented a number of study papers on environmental concerns at national and international scientific forums.

The report of the contracted study on the effects of oil on polar bears was sent to print. A project was contracted out to develop a computer model based upon the results of the study.

### Plans for 1982-83

Review of Environmental Impact Statement (EIS) for exploratory drilling in Lancaster Sound-Northern Baffin Bay will be started. The EIS for Hydrocarbon Development in the Beaufort Sea-Mackenzie Delta Region will be reviewed.

The Division will continue to advise the various committees of the APP, AMOP, BIOS and Kativik and to serve generally in an advisory capacity on physical and biological matters in the northern offshore environment.

### Northern Resources and Economic Planning

#### Non-renewable Resources

##### Oil and Gas

#### Responsibilities of Divisions

The Oil and Gas Lands Division manages the federal government's proprietary interest in oil and gas rights North of 60°. It grants exploration and production licences, maintains a registry of oil and gas rights and monitors royalties and other revenues directly resulting from oil and gas activities.

The Oil and Gas Resources Evaluation Division is responsible for assessing the oil and gas potential of Canada Lands North of 60° and for carrying out economic and geological appraisals of individual parcels of land. The Division assesses exploration programs, records and maintains technical data and keeps a library of exploration reports. Reports on oil and gas activities on Canada Lands are published annually.

The Oil and Gas Engineering Division is responsible for regulating oil and gas activities in Canada's North. The Division sets and enforces standards for safety and general good field practices, including environmental and waste prevention considerations.

On March 5, 1982, the Canada Oil and Gas Act came into force. This Act establishes a new management regime for northern oil and gas activities. The parliamentary process addressed the concerns expressed by the North by amending the Act to take into account Native rights, northern economic participation and environmental protection.

The Ministers of Indian and Northern Affairs, and Energy, Mines and Resources, established the Canada Oil and Gas Lands Administration (COGLA) in the latter part of 1981. The Administration's purpose is to implement the Canada Oil and Gas Act and provide consistency in administering oil and gas exploration and development activities. COGLA serves as the principal contact for the oil and gas industry concerning exploration activities on Canada Lands. Personnel from the Departments of Indian and Northern Affairs and Energy, Mines and Resources were amalgamated into a single group that will report to both Ministers.

Management of social, economic and environmental matters and territorial relations pertaining to oil and gas activities in the North remains within the Department. The Northern Oil and Gas Liaison Directorate serves as the principal point of liaison with COGLA to ensure that the concerns of northerners are reflected in the administration of oil and gas rights and activities.

#### Land Management Review

Oil and gas holdings during 1981 remained fairly stable. At year-end, 60.3 million hectares (Table 1) were held at a level comparable to the pre-Prudhoe oil and gas holding in 1967. The only new rights granted during the year in the southern Territories and central Mackenzie Valley sectors were nine exploration agreements on lands preferentially selected under the amendments to the Regulations by Petro-Canada. To facilitate native land claim negotiations, seven of these exploration agreements restricted access to the lands for exploration purposes until mid-1983. The 7 million hectares granted under these new exploration agreements are approximately equivalent to the rights surrendered from expired oil and gas permits.

The increased number of leases held in 1981 reflects industry's uncertainty about the terms and conditions of the new exploration agreements to be negotiated under the Canada Oil and Gas Act. More than half of the area held for exploration purposes during 1981 is covered by special renewal permits. These discretionary grants were made in consideration of additional exploratory work. The rapidly escalating levels of work requirements for this type of holding provide an appropriate vehicle for the high costs of exploration efforts in the more remote regions of the North. The continuity of such programs to assess the potential for oil and gas reserves is an important element in meeting the objectives of Canada's National Energy Program.

Table 1

*Number of Issued Exploratory Rights (including permits, special renewal permits, exploration agreements) and leases, with areas as of December, 1981:*

Area	Exploratory Rights		Leases	
	No.	Hectares	No.	Hectares
NWT Mainland	110	8 437 703	1288	2 982 902
Yukon	45	590 202	188	265 974
Arctic Islands	1521	31 702 023	612	1 430 406
Arctic Coast				
Marine	441	14 575 008	141	376 192
TOTAL	2117	55 304 936	2229	5 055 474

Table 2

Revenue Received, 1981 (Calendar Year)

	Yukon Territory	Northwest Territories
Licence Fees	Nil	\$ 350.00
Exploration		
Agreement Fee	Nil	2 250.00
Transfer Fee	\$ 1 850.00	15 855.00
Lease Fee	30.00	3 080.00
Rentals	347 594.25	7 469 763.21
Royalties	2 135.61	4 470 284.92
Forfeiture	Nil	Nil
Bonus	Nil	Nil
Miscellaneous	Nil	13.96
Total	\$351 609.86	\$12 231 597.09
Total for Territories: \$12 583 206.95		

*Exploration Activity*

Actual expenditures by industry on oil and gas exploration in the Yukon and Northwest Territories remained relatively stable at about \$400 million annually. Due to the statistical recording method, expenditures for 1981 exploration and development drilling were reported as \$520 million, an apparent increase over 1980. This amount included the expenditures for wells started in 1980 and finished in 1981. Expenditures for geological and geophysical work in 1981 remained at about \$30 million.

Very little geological surface activity was carried out North of 60° during the year. Panarctic Oils carried out the major geological and research project in the Arctic Islands. The level of geophysical exploration has remained constant over the past two years. Canadian Superior, Dome and Geophysical Services Inc. carried out marine seismic surveys totalling about 12 000 km in the Beaufort Sea. Aquitaine (now Canterra) completed a 1 100 km survey in the Baffin Bay-Davis Strait areas. Esso conducted a 1 300 km seismic program in the Norman Wells area and in the southern mainland Northwest Territories. Mobil conducted 100 km of seismic surveys in the Arctic Islands, Panarctic completed a 1 300 km survey and Chevron conducted a 175 km survey on northeast Banks Island.

The Number of wells drilled in 1981 declined to 13 exploratory wells having a combined depth of 38 990 metres.

In its sixth consecutive year of offshore drilling in the Beaufort Sea, Dome and its partners drilled six wells. Three wells, suspended in 1980, were re-entered, drilled to target depth and completed. Three new exploratory wells were begun, but were suspended for re-entry in 1982.

Of the three wells drilled to total depth, Kilannek A-77 was unsuccessful and abandoned. Drilling on Koakoak 22 started in 1978. Oil flows at rates up to 2 830 barrels per day (450 m<sup>3</sup> per day) were recorded on two tests, 160 m apart in a single reservoir. Kopanoar 2 I-44, a stepout to Dome's 1979 oil discovery at M-13, flowed oil in 3 tests and encountered pay zones not developed in the original well. Further delineation, drilling and testing in 1982 (and possibly in future years) would be required to establish the nature and full extent of this new discovery.

Of the three wells suspended for re-entry in 1982, Kenalook J-94 was drilled to a depth of 3 475 m, Orvilruk 0-03 was drilled to 3 606 m and Irlakuk B-35 to a depth of 2 211 m. No testing was carried out at any of these three wells before the wells were suspended for completion in future years.

Gulf Canada and its partners drilled one well in the Beaufort Sea. The Issungnak L-86, drilled from a Canmar drillship, reached target depth and was abandoned.

Esso, on behalf of itself and its partners, drilled two exploratory wells from sacrificial beach artificial islands. The Issungnak 2 0-61 was spudded in 1981, drilled to a depth of 4 460 m and abandoned as a potential oil and gas well. Alerk P-23 was drilled to target depth of 3 223 m without encountering oil and gas and was abandoned.

Panarctic continued its offshore exploration of the Arctic Islands, drilling from artificially thickened ice-platforms at three offshore locations in the Sverdrup Basin. Testing at all three wells resulted in oil and gas discoveries. Oil flowed to the surface of the Skate B-60 well, the first such occurrence from Mesozoic sediments in the Arctic Islands. Oil and gas were also tested in the MacLean I-72 and Cisco I-66 wells.

In addition to its offshore program, Panarctic drilled a further delineation well, Bent Horn G-02, in the Bent Horn oil field on Cameron Island, and in partnership with Dome, drilled an exploratory well at N. Hoodoo N-52 on Ellef Ringnes Island. Both of the wells were dry and abandoned. Other operators included Chevron, which drilled and abandoned its Muskox D-87 well on northern Banks Island, and Paramount Resources, which continued its drilling program in the Southern Territories.

*Production Activity*

The Pointed Mountain Field in the southwest sector of the N.W.T. is the only producing gas field in Northern Canada. In 1981, the field's daily average production was 1.0 × 10<sup>6</sup> m<sup>3</sup> (33.6 million cubic feet per day). The Kotaneelee gas field in the southeast sector of the Yukon, 25 km south of the Pointed Mountain field, was closed down for most of the year due to the lack of export markets. The production from both fields is under contract to West Coast Transmission for exports. Consequently, production tends to be limited by export demand.

The refinery at the Norman Wells oil field in the central Mackenzie River Valley continued to supply its local and downstream markets with products in keeping with the federal government's policy of ensuring that northerners receive the advantages of local energy supplies at near parity with the Edmonton price. Crude oil prices at Norman Wells are substantially less than the current domestic crude prices.

In 1981, the federal government approved the construction of an oil pipeline from the Norman Wells oil field to connect with the pipeline from Zama to Edmonton, Alberta. However, two delays occurred. The first was a two-year delay in starting construction of facilities for increasing production. The second was a two-and-a-half year delay in pipeline construction. Both delays were in response to local northern concerns and were agreed to by the companies proposing the project and the Minister of Indian and Northern Affairs.

The Norman Wells field is one of the largest in Canada with over  $85 \times 10^6$  m<sup>3</sup> (600 million barrels of oil) in place. The completion of Esso's waterflood project and additional productive capacity will increase the recovery factor for these reserves from 17 to over 40 per cent. Production is expected to increase from 3 000 to 30 125 barrels a day of natural oil and gas liquids for the first five years of the project, after which the rate of production will gradually decline. The project will provide major economic benefits and employment opportunities for northerners. Other Canadians will also benefit from enhanced recovery of oil reserves and substantial savings in both oil import compensation payments and foreign exchange.

#### **Basis in Law**

- Canada Oil and Gas Act
- Canada Oil and Gas Land Regulations
- Canada Oil and Gas Rights Regulations
- Oil and Gas Production & Conservation Act — amended under the Canada Oil and Gas Act
- Canada Oil and Gas Drilling Regulations
- Canada Oil and Gas Operations Regulations — (imminent)
- Canada Oil and Gas Production Regulations — (proposed)
- Canada Oil and Gas Geophysical Regulations — (proposed)
- Canada Oil and Gas Structures Regulations — (proposed)
- Canada Oil and Gas Diving Regulations — (proposed)
- Canada Oil and Gas Pipeline Regulations — (proposed)
- Public Lands Grants and Territorial Lands Act — RSC 1952
- Arctic Waters Pollution Prevention Act — RSC 1970

#### **Plans for 1982-83**

The Canada Oil and Gas Lands Administration has estimated that some 200-300 replacement Exploration Agreements and Provisional Leases will be negotiated for the existing northern oil and gas rights in 1982 under the Canada Oil and Gas Act. Esso, Gulf and Dome have submitted tentative exploration programs covering the next four to five years. Both Gulf and Esso have announced plans for new capital expenditure (\$670 and \$170 million respectively) to build new drilling platforms, which will moderately increase the level of exploration in the Beaufort Sea in 1983.

A new Industrial and Regional Benefits Office in the Department of Industry, Trade and Commerce was established by mid-1981. It will serve to increase regional economic and employment benefits for Canadians from major projects undertaken in Northern Canada. Northern employment and opportunities for entrepreneurs will increase as a result of negotiations with COGLA. These negotiations have provided for socio-economic "spinoffs" from proposed oil and gas program.

During 1981, the joint proposal by Dome, Gulf and Esso, for Beaufort Sea Development was the subject of public hearings by the Environmental Assessment Review Panel. The principal objective of the hearings was to establish the guidelines for preparing the Environmental Impact Statement (EIS). The Environmental Impact Statement jointly prepared by the three companies is expected to be submitted for review under the Assessment Review process in mid-1982.

The National Energy Board is expected to conclude its study of the Arctic Pilot Project and of the Drake Point gas field production proposal in the Autumn of 1982 and will publish its decisions and findings in the winter of 1982-83.

Panarctic Oils Ltd. has announced that it intends to increase the number of drilling rigs to five in 1982 (up from three rigs in 1981) for additional drilling capacity in the Arctic. Consequently, Drake Point Field Development should not reduce the winter's exploration efforts in the offshore Arctic Islands.

#### **Mining Division**

##### **Responsibilities**

The Mining Division administers mining and mineral rights (excluding oil and gas), develops policies and assists in drafting legislation covering mineral rights in the Yukon and Northwest Territories. The Mining Division advises various government agencies on current and proposed exploration and mining developments, and maintains an inventory of mineral resources. The Mining Division in Ottawa includes two sections — Mining Resources and Mining Lands.

In the North, two Regional Directors have administrative responsibility for mines and minerals. They are responsible for the Northern Affairs Program in the Yukon and Northwest Territories respectively. A Geological Services Section and a Mining Lands Section are both located in Whitehorse, Y.T. and in Yellowknife N.W.T. A Mine Inspection Section is also located at Whitehorse. The Government of the Northwest Territories provides a similar service at Yellowknife.

##### **Mining Lands**

For administrative purposes, the Territories have been divided into seven mining districts. A mining recording staff is responsible for disposing of mineral rights within each district in accordance with legislation. A Supervising Mining Recorder in each Territory ensures that uniform practices are observed in the administration of the various mining Acts and regulations.

##### **Mining Resources**

The Mining Resources Section maintains a microfilm library on all published scientific reports and unpublished assessment reports on mineral properties in the Yukon and Northwest Territories. The section's prime functions are to assess the potential for mining specific minerals in certain areas within the Territories and to examine proposals for using these areas for parks, transportation routes and power developments. This Section (and the Mining Division as a whole) informs and advises the Minister on current and proposed mine and exploration developments in the North. The Section produces Monthly Mines and Mineral Statistics and annual Mines and Minerals Activities reports. These reports are used by the mining industry, the public and government, and are available upon request.

The Geological Services Section provides a geological service to the mineral industry in the North. Two core libraries, the H.S. Bostock Library at Whitehorse and the C.S. Lord Library at Yellowknife preserve diamond drill core.

Each has laboratory facilities for core-splitting, diamond-saw cutting, thin section preparation and core storage. Regional and district geologists conduct mineral property examinations, collect rock and mineral specimens and advise the mineral industry, government departments and research scientists on geological and exploration matters. Department geologists assist prospectors by identifying rock and mineral specimens, conducting prospector training courses and by preparing geological compilation maps on areas containing minerals.

### Mine Inspection

The Mines Inspection Section advises on the Yukon Territory's Mining Safety Ordinance, Mine Safety Regulations and its Blasting Ordinance and Regulations. The Section also prepares new safety legislation when required. A regional mining engineer is stationed at Whitehorse. He has a staff consisting of a district engineer, an electrical-mechanical engineer, an environmental engineer, a mine rescue superintendent, a claim inspector and a clerk. The Section is responsible for the following: inspecting mines, quarries, blasting operations and mineral claims to ensure that they comply with safety legislation; inspecting mineral claims to ensure compliance with the Yukon Quartz Mining Act; ensuring that enough mine personnel are trained in mine rescue, recovery operations and first aid; conducting ventilation and dust surveys; monitoring radioactive contamination, and carrying out environmental studies at underground and surface mining properties.

### Yukon Territory

#### Mining Production

Mineral production in the Yukon Territory during 1981 was valued at \$307.9 million (excluding natural gas), compared to \$364 million for 1980. Lower metal prices accounted for much of the reduced value of production. Mineral production came from three lode mine establishments, which produce zinc, lead, silver, copper and gold. In addition, gold was produced from over 150 placer mining operations. Lead and zinc accounted for 50 per cent of mineral production value, followed by silver, 22.6 per cent and gold, 20.7 per cent.

In 1981, the Yukon Territory accounted for 3.2 per cent of the total value of Canadian metallic mineral production. It accounted for 18.9 per cent of the lead, 8.7 per cent of the zinc, 14.3 per cent of the silver, 7.2 per cent of the gold and 1.3 per cent of the copper produced in Canada. Producing mines employed 993 persons, or 8.6 per cent of the Yukon working force. More people were employed full-time and seasonally, in placer mining.

#### Mineral Exploration

The following chart shows mineral claims stated and recorded in the Yukon during the year with comparative figures for 1980.

Districts	Claims Recorded	
	1981	1980
Whitehorse	3 586	3 281
Dawson	1 068	2 091
Mayo	3 208	2 253
Watson Lake	3 430	3 545
Total	11 292	11 170

Estimated expenditures on mineral exploration amounted to \$40 million in 1981 compared to \$39.4 million in 1980. Much of the expenditure was for drilling and advanced stages of exploration such as underground evaluation. Lead-zinc, silver and tungsten exploration continued at a high level. Little effort was expended on uranium and copper exploration. The effects of the general economic recession and low metal prices are expected to significantly reduce exploration expenditures in 1982 from previous levels. Because tungsten markets have remained relatively stable and prices are relatively firm, exploration should continue at a strong pace. In 1981 there were 11 292 quartz claims, 7 160 placer claims and 597 placer leases registered.

### Northwest Territories

#### Mining Production

Metallic mineral production in the Northwest Territories during 1981 was valued at \$456 million compared to \$435 million during 1980. Production came from nine mining establishments that produce zinc, lead, tungsten, gold, silver, and copper. Lead and zinc accounted for 73 per cent of production value, while gold accounted for 14 per cent and tungsten 9 per cent. The mines are: Pine Point Mines Ltd. (zinc, lead); Giant Yellowknife Mines Ltd. (gold, silver); Cominco's Con Mine (gold, silver); Camlaren Gold Mines (gold, silver) Canada Tungsten Mining Corporation (tungsten); Terra Mining and Exploration Ltd. (silver, copper); Echo Bay Mines Ltd. (silver, copper); Cullaton Lake Gold Mines Ltd. (gold) and Nanisivik Mines Ltd. (zinc, lead, silver).

In 1981, the Northwest Territories accounted for 3.3 per cent of the value of Canadian metallic mineral production. This accounted for 100 per cent of the tungsten, 23.8 per cent of the lead, 22.5 per cent of the zinc, 7.4 per cent of the gold and 3.1 per cent of the zinc produced in Canada. There were 2 085 persons employed by the producing mines or 9.2 per cent of the Northwest Territories' work force.

#### Mineral Exploration

Mineral claims staked and recorded in the Northwest Territories during 1981 with comparative figures for 1980 are as follows:

Districts	1981		1980	
	Claims Recorded	Area (ha)	Claims Recorded	Area (ha)
MacKenzie	539	282 202	487	306 633
Arctic & Hudson Bay	479	381 514	773	534 552
Nahanni	23	8 726	71	25 244
Total	1 041	672 442	1 331	886 429

Mineral exploration continued at a high level in 1981 with expenditures estimated at approximately \$50 million. At year end it was evident that exploration activities would decline substantially in 1982 because of low metal prices and the oversupply of uranium in world markets.

Exploration was principally directed to the discovery of uranium, gold and base metal deposits. Total surface diamond drilling exceeded 180 thousand metres. Uranium exploration was conducted in regions of Proterozoic sedimentary rocks including the Bear structural province, Thelon — Dubawnt — Baker Lake — Amer Lake region, Nonacho Basin and East Arm Great Slave Lake fold belt. Exploration for gold in veins, shear zones and iron formations continued to be concentrated in Slave Province and the Kaminak — Rankin Subprovince in southern Keewatin District. Known gold bearing quartz veins in slave Province, northeastern Mackenzie District, including the Ptarmigan, Salmita, Bullmoose Lake, Ruth, Diversified, North Inca and Arcadia properties were explored. Base metal exploration continued at a respectable level in 1981.

## **Northern Economic Planning Directorate**

### *Forecasting and Analysis Division*

#### **Responsibilities**

The Division analyzes the structure and function of the economies of the N.W.T. and the Yukon. Specifically, it analyzes a number of variables and provides five-year economic forecasts. It also assesses the probable socio-economic and demographic effect of economic events.

#### **Review 1981-82**

The Division was established in October 1981 and is a result of a reorganization of the former Data Management Division, which was responsible for collecting and interpreting data required for economic planning and evaluation.

The Forecasting and Analysis Division has been working almost exclusively on five-year economic forecasts and on a study of the economic effects of taxing certain employment benefits payable to workers in the North.

#### **Plan for 1982-83**

It is anticipated that the study of taxation of northern employment benefits will be completed within the fiscal year. The workload will then become increasingly oriented toward economic forecasting.

### *Transportation and Communications Division*

#### **Responsibilities**

This Division plans and develops transportation and communications policies and analyzes transportation projects to determine their social and economic effects.

#### **Review 1981-82**

The Division participated in reviewing several transport policy documents and assessed applications from northern resource developers for financial assistance to build their transportation infrastructures. The Division prepared a paper on cost recovery (based upon user fees) for roads built to service resource development projects.

Terms of Reference for a survey of traffic on the Dempster Highway and for a Mackenzie Delta transportation study were developed. The Division also co-ordinated the Department's involvement in the October 1982 Transportation Conference, and participated in reviewing the Arctic Air Facilities Policy.

#### **Plan for 1982-83**

The Dempster Highway traffic survey will be begun in co-operation with both Territorial Governments. The Division will assess the transportation infrastructure necessary to re-supply projects in the Beaufort Sea and Mackenzie Delta. Co-ordination of the Department's responsibilities for the Arctic Airports Program will continue, as will Departmental input in the co-sponsorship of the Northern Transportation Conference. Finally, the Division will review the statistics on northern transportation to determine how it can be improved.

### *Native Economy and Renewable Resources Development Division*

#### **Responsibilities**

The Native Economy and Renewable Resources Development Division was established during 1981-82. It provides a focal point for the Department's stated objective of balancing the interests of natives and non-natives in developing the resources and economy of the North.

#### **Review 1981-82**

During 1981-82, the Division supported resource harvesting studies by the Baffin Region Inuit Association and, in the Keewatin, by the Inuit Tapirisat of Canada. It also held informal discussions with the Dene Nation and the Métis Association of the N.W.T. relating to similar studies in the Mackenzie Valley.

The Division has helped the Métis Association of the N.W.T. and the Council for Yukon Indians to establish corporations to promote native participation in northern economic and social development. In addition, the Division funded a major study of northern native development corporations. The study's purpose was to determine the scope and impact of these corporations.

#### **Plans for 1982-83**

The Division will continue to encourage and assist native participation in economic development. It will also continue to fund resource harvesting studies.

### *Non-Renewable Resources Development Division*

#### **Responsibilities**

The Non-renewable Resources Development Division performs the lead role in planning, developing and implementing mineral-related policies and carries out both short-term and more detailed studies of the economic and financial aspects of mineral development and specific mining projects in the North. It also monitors mining projects to ensure that they contribute to meeting government objectives. Finally, the Division carries out basic research on mineral-related issues and advises senior management on the development of non-renewable resources in the North.



Aerial view of Resolute Bay Airport, service buildings, dormitory-type hotel and government buildings; airplanes near oil storage tanks in background. Resolute Bay, Cornwallis Island, N.W.T. Photo by George Hunter 1974.

#### **Review 1981-82**

The Minister announced that the Department would be developing a Northern Mineral Policy. This Comprehensive policy will take into account issues such as resource development, environmental protection and native land claims. The Division also consults with Territorial Governments, industry and other interested groups on matters relating to developing renewable resources. It has also initiated a number of both in-house and contracted-out studies.

The Division participated in various planning studies and in evaluating consultants' reports on the construction of roads and their effect on the Macmillan Pass region.

Monitoring of major mining projects such as Arvik and Nanisivik is continuing. The Division assessed the extent of Nanisivik ore reserves in order to determine whether it will remain productive for the length of time planned.

In the summer of 1981, the Division set up an inter-departmental group to assess a second feasibility study submitted by Cyprus Anvil on the development of a lead-zinc smelter in the Yukon. This study indicated that it would not be commercially feasible to develop a smelter under present conditions.

The Division's mining cash flow model (CASHIM) was improved to allow greater flexibility in its use.

The Division is reviewing Territorial Royalty Regimes. A number of amendments are being considered and new proposals for discussion with all interested parties will be developed.

#### **Plan for 1982-83**

After the Northern Mineral Policy has been formulated, the Division will develop strategies for implementing it. The Division will also participate in implementing the National Mineral Policy, and will continue to plan and evaluate new mining projects in both Territories. It will continue to work with Territorial Governments and the mining industry to evaluate new proposals for mineral processing in the North.

#### **Energy Planning Division**

##### **Responsibilities**

The Energy Planning Division develops policy covering all forms of energy in the North. Work has focused on developing cost-effective alternatives to petroleum-based energy, upon which the North relies to a great extent.

The Division works closely with federal government agencies and the Territorial Governments to identify major energy concerns and to develop suitable northern energy programs. It provides policy input and analysis on the supply of electric power and reviews for the Minister the plans and objectives of the private corporations, federal agencies and others who are involved in providing electricity to the North.

##### **Review 1981-82**

Two subsidies, the Commercial Power Rate Relief Subsidy, and the Federal Power Support Program were extended to March 31, 1982. There are now three energy subsidies, including the existing Federal Power Support Program.

A task force, formed to prepare a northern energy strategy, completed its report in the spring of 1982. Representatives from each of the two Territorial Governments, the Department of Energy, Mines and Resources, the Northern Canada Power Commission and the Department of Indian Affairs and Northern Development were members of the task force. The group made significant progress toward developing a Northern Energy Policy. Developing this Policy represented the Division's major effort during the year and led to the announcement of new policy initiatives by the Minister.

The Division has worked closely with the Northern Canada Power Commission in the analysis of the proposed 20 megawatt hydro project at Whitehorse. Toward the end of 1981, the Treasury Board gave final approval for the \$58 million installation.

##### **Plans for 1982-83**

In the forthcoming year, the Division will emphasize studies of local energy resources, conservation, off-oil conversion, and participation in demonstration projects for alternative energy developments in remote communities. It will also begin studies of future hydro projects.

**Northern Roads and Airstrips Directorate**

**Responsibilities**

The Directorate has program and policy responsibility for developing roads in the North. It emphasizes socio-economic, financial and environmental aspects when planning new roads. Responsibility for maintaining and managing them has been transferred to the territorial governments.

**Review 1981-82**

By 1983, the Liard highway will link Fort Nelson, B.C., on the Alaska Highway with the Mackenzie Highway, near Fort Simpson, N.W.T. Construction work on the highway continued this year, bringing the amount of subgrade completed to 164 km. The Directorate has made special efforts to arrange small contract packages for highway construction so that opportunities will be available for small northern contractors. Construction contracts have been awarded for the section from km 164 to 208, which should be completed this year.

Hire North, an agency of the Government of the Northwest Territories was established in 1972 to provide training and employment in highway construction to native people. Workers with Hire North are building the section between km 208 and km 254.5. The undergrade is scheduled for completion in the fall of 1982.

The Dempster highway runs 674 km northward from Flat Creek (near Dawson), Yukon, to meet the Mackenzie Highway, 63 km south of Inuvik, N.W.T. Future work on the highway will involve gravelling, reconstructing older sections and replacing temporary river crossings. A committee of representatives of the Territorial Governments is carrying out a management plan that will permit the highway to be used throughout the year with as few adverse environmental effects as possible.

The subgrade of the Carcross-Skagway Road has been completed, although guide rails and delineators have yet to be installed. It was officially opened in the summer of 1981. The Shakwak Project continued, involving the reconstruction and paving of both the Haines Road from the Alaska/British Columbia border to Haines junction, and the Alaska Highway from Haines Junction to the Yukon/Alaska border. The project began in 1977 as a joint program of Public Works Canada and the United States Federal Highways Administration. It was expected to have been completed in ten years at an estimated cost of \$200 million. Since the U.S. Congress has approved only \$56 million for the Project, work has been limited to the reconstruction of the Haines Road. No further contracts will be awarded until more funds are approved.

The North Canol Road extends 235 km northeastward from the Robert Campbell Highway, near the community of Ross River, to the Macmillan Pass on the Yukon-N.W.T. border. In 1980, mining companies intending to develop properties at or near the Macmillan Pass, asked that the North Canol road be upgraded in order to allow ore trucks to use the route. Feasibility and planning studies were started in 1981.

The Northern Resource Roads Program provides financial assistance to companies building initial and permanent access roads to resource development areas. Under this Program, Cattermole Timber Ltd. has applied for assistance in constructing a permanent access road from the Alaska Highway to its timber stands in the Liard River watershed.

**Socio-Economic Agreements Directorate**

**Responsibilities**

The Directorate is responsible for negotiating and implementing General Development Agreements in both Territories, their subsidiary agreements, and other federal/territorial economic agreements. The Directorate also develops policies and plans to provide maximum socio-economic benefits to all northern residents from economic development. Its work involves creating mechanisms to ensure that northerners are adequately consulted on, and involved in, economic development activities. The Division works to create opportunities for training, employment and northern business, and to minimize any adverse social and cultural effects of economic development.

**Review 1981-82**

The directorate completed Phase 2 of a study on the establishment of native development corporations in the northern Territories. It continued to assess the economic implications of native land claims. It also carried out preparatory work for transferring the administration of the Yukon Small Business Loan Fund to Yukon, extended the Subsidiary Agreements on Tourism Development and Renewable Resource Development in Yukon by one year and worked on the development of a Canada/Northwest Territories Subsidiary Agreement on Area and Community Economic Development. The socio-economic requirements for the Norman Wells project were developed in consultation with territorial and company officials. As well, the socio-economic policies and plans of a number of proposed mining projects were kept under review. The Directorate also worked with COGLA in planning for the Northern Benefits requirements within the Canada Benefits Package.

**Plans for 1982-83**

The Directorate will be involved in negotiating and implementing a number of economic development agreements in both the Yukon and Northwest Territories. These activities will involve umbrella agreements in each Territory and subsidiary agreements on priority programs for economic development.

The Directorate will transfer administration of the Yukon Small Business Loan Fund to the Yukon. It will be involved in renegotiating all existing petroleum exploration agreements and will negotiate commitments to maximize Northern Benefits in each new agreement.

Finally, the Directorate will continue to advise on and monitor the socio-economic aspects of mining projects, the Norman Wells project, the Beaufort Sea and other proposed major development projects.

## **Indian and Inuit Affairs Program**

### ***Responsibilities***

The Indian and Inuit Affairs Program helps Indians and Inuit in the Yukon Territory and Northwest Territories to achieve their cultural, social and economic goals. The Program works in co-operation with native groups and the Territorial Governments.

### ***Headquarters***

### ***Review 1981-82***

A total of \$143 000 was allocated in the Yukon Territory and \$61 300 in the Northwest Territories during the 1981-82 fiscal year for the Band Training Program. In the Yukon Region, the Program emphasized an approach to community development and band management that is sensitive to the native culture. A "distant education" pilot project to satisfy the special educational requirements of native northerners was developed and field-tested. The project, which cost \$24 000, consisted of individual study programs, combining both home study assignments and group sessions in a wide range of technical, vocational, academic and program-oriented skills. The Band Training and Advisory Services Directorate also provided \$175 000 for a social action program for the Whitehorse Village Relocation Project.

In the Northwest Territories, band training initiatives were directed primarily to chiefs and councillors. The training included workshops in economic development, core funding, and financial programs. These workshops also covered audit work and local government activities being carried out for the benefit of Indian leaders. Field trips enabled leaders to familiarize themselves with the activities of their counterparts in other bands.

### ***Plans for 1982-83***

A study to establish a broadcasting system in the North is underway; \$15 000 in the Yukon, and an additional \$15 000 in the Northwest Territories have been set aside for this purpose.

Band Training will continue to sponsor CESO (Canadian Executive Services Overseas) services in the Yukon. Volunteers from this organization currently assist in socio-economic development projects.

## ***Resource Development Impacts Directorate***

### ***Review 1981-1982***

The Resource Development Impacts Directorate was established in 1981-1982 to respond to the concerns of Indian people about major resource development. In 1981-1982 Indian bands in the Yukon, British Columbia and Northwest Territories were provided with funding to enable them, by planning and organizing in advance, to deal more effectively with the impacts of major resource development.

In the Yukon, the Directorate provided the Ross River Band with financial assistance and technical advice to assist them in their negotiations with Yukon Barite Ltd. Negotiations were aimed at reaching a comprehensive agreement covering the development of a small barite quarrying operation and a grinding mill. Yukon Barite Ltd. has invited the Ross River Band to participate in the exploitation of its barite deposit north of the Indian community. The negotiations involve equity share participation, affirmative employment action, employment training programs and preferential sub-contracting.

The Ross River Band was provided with financial and technical advice to help it to deal with the effects of a second resource development project — Canada Tungsten's new tungsten mine and milling operation in the Macmillan Pass area. The Band's concerns are being considered in the development scenario.

In northern British Columbia, the Lower Post Band was provided with funds to help its members to deal with the impact of the proposed damming of the Liard River by B.C. Hydro. Studies are being conducted to assess the potential effects of the project, and findings will be presented at various federal and provincial hearings and conferences.

In the Northwest Territories, a number of current and proposed resource developments will affect Indian residents. The proposed B.C. Liard River Hydro project will also affect the Territories, as will the Slave River Hydro project. Other projects, such as the Norman Wells Pipeline, the Arctic Pilot project and Beaufort Sea exploration, are reported under the Northern Affairs Program. The Indian and Inuit Affairs Program regional office in Yellowknife continues its efforts to ensure that Indian people are aware of proposed developments that are likely to affect them.

### ***Plans for 1982-1983***

The Resource Development Impacts Directorate will provide advice and funding to Indian people whose communities will be affected by resource developments.

## *Regional Offices*

### *Yukon Territory*

#### **Responsibilities**

The Yukon Region of the Indian and Inuit Affairs Program carries out administrative functions for approximately 3 200 status Indians in 12 bands in the Yukon and 3 in northern British Columbia. The Program helps Indian people achieve their cultural, social and economic goals and ensures that Canada's constitutional and statutory obligations and responsibilities to them are fulfilled.

#### *Economic and Employment Development Program*

##### **Review 1981-1982**

The Economic and Employment Development Program assisted Indian people to develop and expand economically-independent businesses and to create jobs. The Program

provided loans, contributions and counselling services for these purposes.

During the past year, loans totalling \$116 800 and contributions totaling \$215 000 were made to Indian entrepreneurs. This resulted in the development of new businesses, the expansion and modernization of others and permitted Indian people to continue to pursue traditional activities such as hunting, fishing and trapping.

In 1981-1982, the Program disbursed \$100 000 to two bands to promote their involvement in major resource development.

An additional \$80 000 in special project funding was provided to the Yukon Indian Arts and Crafts Co-operative.

Throughout 1981-1982, economic and employment development were priorities in the Yukon Region. Accordingly, the Program continued to provide the support necessary to involve Indians in the long-term growth of the economy of the Yukon.

##### **Plans for 1982-1983**

In 1982-1983, the Economic and Employment Development Program will work to support Indian involvement in major resource development ventures. It will encourage long-term planning to enable Indians in the North to share in the economic and employment development opportunities presented by similar projects.

Regular monitoring of ongoing projects, securing appropriate advisory services and carrying out analyses of certain problem areas will continue.

A number of employment development initiatives were taken early in 1982, and as a result, it is expected that several new businesses will be established in all sectors in 1982-1983, and that a significant number of employment training opportunities will become available.

#### *Social Development Program*

##### **Review 1981-1982**

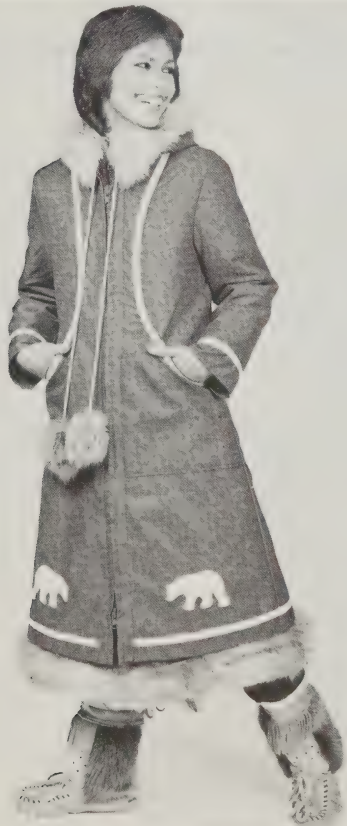
In 1981-1982, all Yukon bands, with the exception of the Atlin Band in northern British Columbia, were administering their own social development programs.

These bands had assumed additional responsibility for managing rehabilitation funds for operating alcohol treatment programs.

In 1981-1982, the major focus of the Social Development Program was to increase the administrative capacity and effectiveness of the regional office. A Data Base Information System was developed to permit the gathering and retrieval of accurate, verifiable information to support program activities. Band staff training efforts were increased, and training in new information reporting procedures was conducted. Three workshops for band social services workers were held throughout the year. In 1982-1983 the Program will increase the level of training, the frequency of field visits and make more consultative services available to participating bands.

The Program initiated discussions with bands and the Yukon Government to increase Indian participation in Child Welfare and Adult Care Activities in the Region. These discussions have formed the basis for more work in this area in 1982-1983. Similarly, the Program has launched discussions with bands, the Yukon Government, Health and Welfare Canada and the RCMP to clearly define service interfaces between governments and agencies for next year.

Yukon resident Brenda Chambers models a parka produced by the Yukon Indian Arts and Crafts Co-operative. The Co-operative received \$80,000 (dollars) in special project funding from the Yukon Region, Indian and Inuit Affairs program, 1981-1982. (#P4)



### **Plans for 1982-1983**

The Program will continue to support the Human Resource Development Program (HRDP), being promoted by the Council for Yukon Indians. The HRDP is an education concept designed to provide needed skills in the community through a degree program delivered locally. It is hoped that this Program will result in bands being able to demonstrate more and better skills in managing program and funds, and in developing comprehensive community plans. The Program was funded with contribution funds made during 1981-82.

### **Education Program**

#### **Review 1981-1982**

Elementary and secondary education programs are the responsibility of the Yukon Government. However, post-secondary education, adult and occupational skills training programs are of direct concern to the Indian and Inuit Affairs Program itself.

In 1981-1982, 26 students attending universities, colleges and technical training institutes received financial assistance that enabled them to pursue courses in Business Administration, Law, Education and Broadcasting.

In the past year, 70 students were enrolled in Yukon Hall, the Region's only student residence, in order to attend in-school programs in Whitehorse. The band-administered group home program again provided residence placements for students attending school in Liard and Ross River. In addition, 36 students were placed in boarding homes in Whitehorse and Watson Lake.

In 1981-1982, financial assistance was provided for two courses in truck-driving, held in Whitehorse and Carcross respectively.

### **Plans for 1982-1983**

Plans for 1982-1983 include continuing support for education programs and involvement in the Human Resource Development Program. More long and short-term occupational skill development at the community level is also planned.

### **Local Government Program**

#### **Review 1981-1982**

The Yukon Region's Local Government Program made funding available for community services administered by 15 Yukon bands. Local government programs provided funds for various purposes such as core funding, covering overhead payments, firefighting equipment, water and sanitation facilities, and programs in recreation, community planning and policing.

The Local Government Program provided capital funding to band councils for the construction of housing and other band buildings, for community services and for surveying of land suitable for Indian housing. In 1982-1983, the Yukon Region will work closely with the Canada Mortgage and Housing Corporation to increase the number of houses built in communities and to create more opportunity for home ownership.

In 1981-1982 the Kwanlin Dun Village Relocation Project advanced to the Treasury Board submission stage, with resources for a social action program being provided to the Kwanlin Dun Band Council in preparation for this Project.

During 1981-1982, two bands in the Yukon Region were involved in a pilot Remote Learning-Training Program in conjunction with the International Correspondence School. The Program, designed to provide training in band management for band members, was successful and may be used across Canada in 1982-1983.

### **Plans for 1982-1983**

Bands will continue to control and manage municipal services. A high priority has been placed on comprehensive community planning and training for band members.

### **Reserves and Trusts**

#### **Review 1981-1982**

A committee was formed to review problems associated with the present occupation of Yukon lands by native people. This committee addressed a number of concerns expressed by the Council for Yukon Indians. Many more problems are now being resolved as part of the land selection process during land claim negotiations.

### **Plans for 1982-1983**

The Reserves and Trusts Program during the next year will continue its work to identify, document and resolve land related problems.

### **Northwest Territories**

#### **Responsibility**

The Regional Office of Indian and Inuit Affairs in Yellowknife consults with sixteen band councils, native associations and the Northwest Territories Government to promote the social and economic development of Indian bands.

Programs involve carrying out the Government's annual treaty obligations to bands and individuals. Core funding is made available to band councils to enable them to develop an administrative capability. These funds are also used to provide administrative and financial management advice to the band councils.

The Economic Development Program provides advice and financial assistance to individuals to encourage socio-economic development and to enable them to communicate with the various government departments and private organizations involved in economic development in the North.

**Review of 1981-82**

Band councils continued to improve their management and administrative capability. Fourteen band councils hired managers to assist with business development initiatives and in the administration of job creation programs. The Economic Development Section continued to provide financial advice to individuals, associations, native groups and band development corporations in the area of business development. The Program continued to focus its attention on socio-economic planning at the community level by supporting the establishment of band economic development committees. Nine such committees have been formed. The Program continued to provide administrative training to band secretaries and managers.

**Plans for 1982-83**

Socio-economic development will continue to be the main concern of the Regional Office. Priorities include working more closely with Dené leaders and chiefs in the major areas of program development, training capability and expertise in business management. The funding and administrative support of the band councils will be based upon their stated priorities in the area of general socio-economic development.

**Administration Program**

**Technical Services and Contracts Branch**

**Responsibilities**

The Technical Services and Contracts Branch is responsible for providing professional and technical expertise in planning, designing, procuring, maintaining and operating real property and other departmental assets. The Branch also draws up and administers contracts for obtaining the goods and services associated with these activities. Finally, the Branch develop the policies, standards, guidelines and systems needed to carry out its responsibilities in these areas.

The Transportation Division, which is part of the Branch, provides engineering services for managing the planning, design and construction of northern highway systems. It also advises on procuring, operating and maintaining the Department's mobile equipment (such as vehicles and construction machinery) and its marine facilities. Through its field office in Edmonton, the Division monitors related work of other departments and agencies.

The Buildings Division provides technical support to the Northern Program on building construction, operation and maintenance.

**Review of 1981-1982**

Construction work on the Liard Highway continued, bringing the amount of subgrade completed to 200 km.

Work on the Dempster Highway continued, including the construction of the Peel River cable ferry and haulout facilities.

The grading and surfacing work on the Carcross-Skagway Highway was completed in the vicinity of Carcross.

The Branch began planning studies for the proposed reconstruction of the Canol Road from Ross River to Macmillan Pass.

Three staff houses were constructed during the year; two at Pangnirtung and one at Baker Lake.

These houses demonstrate northern housing technology developed over several years and incorporate design, construction and operational features specifically suited to the northern climate. The houses are cost-effective, and were built to conserve energy, both when under construction and in actual use.

The elevated foundation design takes changing permafrost conditions into account. Floors in the houses can be adjusted to remain level when these changes in the permafrost occur, while allowing snow to blow clear of the building.

Tanks for storing water and collecting sewage (when required) are built into a heated enclosure suspended below the ground floor and are easily accessible for service.

A constant-flow air-recirculating system provides a constant flow of fresh heated and humidified air through diffusers under each window. These diffusers, together with quadruple-glazed fixed sash windows eliminate condensation and permit clear viewing through the windows, even under the most extreme weather conditions.

**Plans for 1982-1983**

In general, plans include the completion of the Liard Highway grading, the re-design of the Canol Road, and the continued rehabilitation of the Dempster Highway.

The evaluation of the performance of one of the Frobisher Bay staff houses constructed in 1980 will continue. This house was equipped with a three-panel solar domestic water heater when it was built. The solar system, together with the building's heating system, will be monitored for performance using specially installed instruments to measure temperature and humidity, as well as fuel oil and electrical consumption.

Summary of Direct Northern Expenditures (000's)	\$	%
Total Forecast 1981/82	113 207	100.0
Expenditure by Northern Objective:		
Protection of the Environment	30 905	27.3
Economic Growth	27 932	24.7
Quality of Life	19 856	17.5
Administration and Support	18 553	16.4
Social and Cultural Development	11 207	9.9
Evolution of Government	2 630	2.3
Leisure and Recreation	1 769	1.6
Sovereignty and Security	355	0.3

# Department of Justice

## **Review 1981-82**

Work to consolidate the delivery of legal services under the aegis of the Northwest Territories Legal Services Board continued during the year. Native courtworker services in the Northwest Territories also fall within the jurisdiction of the Legal Services Board.

Payments totalling \$440 425 were made to the Northwest Territories, including \$261 300 for legal aid, \$23 425 for compensation to victims of violent crimes and \$155 700 for native courtworker services.

Payments totalling \$115 321 were made to the Yukon Territory, including \$50 000 for legal aid, \$18 876 for compensation to victims of violent crimes, and \$46 445 for native courtworker services.

## **Plans for 1982-83**

During 1982-83, it is expected that the existing legal aid arrangements in the Territories will be examined with a view to reflecting changes that may be made as a result of the current legal aid negotiations with the provinces.

### **Summary of Direct Northern Expenditures (000's)**

	\$	%
<i>Total Forecast 1981/82</i>	1 024	100.0
<i>Expenditure by Northern Objective:</i>		
Quality of Life	1 024	100.0

## **Responsibilities**

The Minister of Justice appoints judges to the Territorial Supreme Courts, while the Department, with offices in Whitehorse and Yellowknife, directs court proceedings on behalf of the Crown under the Criminal Code, other federal statutes and Territorial Ordinances. The Department also shares the costs of legal aid and the native Courtworker Program. It also helps to compensate victims of violent crimes in the Territories. The Department's northern offices are expanding to enable them to provide legal services in the civil litigation field to other federal government departments involved in legal disputes.

# Labour Canada

## Responsibilities

Labour Canada administers the Canada Labour Code and is responsible for maintaining a balanced legislative framework covering industrial relations in the federal jurisdiction. It also establishes minimum standards for wages, working conditions, safety and health and helps to resolve problems facing individuals or groups in these areas. Labour Canada works to minimize and resolve labour-related conflict within the Department's legislative framework.

Employees or employers engaged in any provincial, national or international work or business fall within Labour Canada's jurisdiction.

Because labour affairs are becoming more and more complex, Labour Canada maintains offices in major centres across the country to make the Department's services more accessible to those who need them. These offices have primary responsibility for implementing departmental programs, while maintaining close liaison with headquarters.

## Mediation and Conciliation Services

The Mediation and Conciliation Branch, through the appointment of Conciliation Officers, Conciliation Commissioners, and Mediators, provides a third-party to help resolve industrial disputes in the federal jurisdiction (including the Territories).

This activity covers collective bargaining breakdowns and other problems with labour-management relationships.

## Review 1981-82

During the fiscal year, the service handled 13 collective bargaining disputes affecting territorial employees. Eleven of these disputes were handled to finality, through either conciliation or post-conciliation negotiations. At fiscal year-end, two disputes were pending. These involved companies engaged in mining, road and water transportation and construction.

## Arbitration Services

The Branch plays a role in resolving disputes arising over the interpretation, application or alleged violation of the provisions of collective agreements. During fiscal year 1981-82, Arbitration Services received three requests from the Northwest Territories and the Yukon for ministerial appointments of arbitrators and arbitration board chairmen. Two arbitrators were appointed and the remaining case was still pending as of March 31, 1982.

## Mountain Region

The following summarizes the activities carried out in the North (Yukon Territory and Northwest Territories) by the Whitehorse Office of Labour Canada, Mountain Region. This report covers the 1981-82 year administration of Part III and Part IV of the Canada Labour Code, the Treasury Board's Occupational Safety Policies, the standards and guidelines in the Federal Public Service and the Fair Wages and Hours of Labour Act.

A Labour Canada office has been operating in Whitehorse, Y.T. since August 2, 1978. It is staffed by a Labour Affairs Officer and a support staff. The office is designed to serve both the Yukon and Northwest Territories. A Zenith toll-free line between Whitehorse and six major N.W.T. communities was installed to provide better service to the area. As required, staff from both the Vancouver and Edmonton offices supplement the office's activities.

## Federal Contracts

a) Inspections of Government Contracts (Fair Wages and Hours of Labour Act); During the fiscal year, the Labour Affairs Officer from Whitehorse investigated eight complaints (of these, three originated in the Northwest Territories and five in the Yukon Territory). Wage adjustments were collected from one contractor as a result of these inspections. Violations were corrected and \$21 117.86 was recovered for eight employees in the Northwest Territories.

b) Wage Schedules Issued:

	Northwest Territories	Yukon Territory
Construction Contracts	87	44
Service Contracts	—	3

c) Annual surveys of construction wages were conducted in the Northwest Territories and the Yukon Territory. These surveys provided enough data on wages to establish prevailing wage rates for inclusion in Labour Conditions Schedules for Federal Government Contracts. These prevailing wage rates are also made available for use by the Yukon Territory Labour Standards Branch and Contracts Tendering Department.

### **Part III — Canada Labour Code (Labour Standards)**

It should be noted that the provisions of Part III of the Canada Labour Code do not apply to any local or private work, undertaking or business in either the Yukon or the Northwest Territories. However, as in the provinces, the provisions apply to those businesses or undertakings that usually fall under federal jurisdiction.

During the 1981-82 fiscal year, 48 complaints were investigated under Part III of the Canada Labour Code (Labour Standards), of which 16 were in the Yukon Territory and 32 in the Northwest Territories. As a result of these investigations, \$4 838.35 was recovered for 6 employees in the Yukon Territory and \$9 388.92 for 9 employees in the Northwest Territories. In the same period, 20 routine inspections were carried out in the Northwest Territories.

### **Part IV — Canada Labour Code (Safety of Employees)**

The long-term objective in the Territories is to implement a comprehensive employment safety program that covers employees subject to Part IV of the Canada Labour Code. The Code includes employees in the Public Service of Canada who are covered by the Treasury Board Occupational Health and Safety Policy. Under Part IV of the Code, the Department is responsible for ensuring that employers doing business with the federal government provide safe working conditions for their staff. In the Federal Public Service, the Department acts as an agent of the Treasury Board in helping to develop and improve safety programs. It also monitors existing programs in accordance with the Occupational Health and Safety policies of Treasury Board.

### **Summary of Activities — Northwest Territories and Yukon Territory**

In the Northwest Territories, during the 1981-82 fiscal year, the Department carried out 33 safety visits involving complaints, inspections, accident investigations, surveys and the development of the Safety Audit Program. The following industries, companies, Crown corporations or departments, were covered:

1. Banks
2. Highway Transport
3. Telephone Industry (Northwest Telecommunications)
4. Northern Canada Power Commission
5. Canada Post Corporation
6. Parks Canada
7. Airlines
8. Transport Canada
9. Shipping (Northern Transportation)
10. Indian and Northern Affairs
11. Health and Welfare
12. Fresh Water Fishing Corporation

On May 9-10, 1981, the Labour Affairs Officer from Whitehorse represented the Department at the first annual Yukon Federation of Labour Convention held in Whitehorse. The Federation acts as a co-ordinating body for most of the Labour Unions operating in the Yukon Territory.

During September 1981, the Labour Canada office in Whitehorse received a request for a speaker at an annual Women's Conference. Arrangements were made to have a spokesperson from the Department's Women's Bureau attend the Woman & Law Conference. The Conference, held in Whitehorse on September 25-27, 1981, was jointly sponsored by the Committee on the Status of Women and the Whitehorse Women's Centre.

The Labour Affairs Officer in Whitehorse participated in a group presentation for postal employees at the time when the Canada Post Office was making the transition from a federal department to a Crown corporation. The presentation explained how labour laws would affect these workers in the future because of their new status as employees of a Crown corporation.

During 1981, the Department concluded new formal agreements with the Yukon and Northwest Territories. Under the agreements, they will be carrying out technical inspections of boilers, pressure vessels and elevators and escalators in federal buildings. Inspections will be done on behalf of Labour Canada.

### **Accident Compensation**

To the end of March 1982, the Department processed 353 claims in the Northwest Territories and 99 in the Yukon.

### **Plans for 1982-83**

For the fiscal year 1982-83, the priorities of our office in the Territories will be to continue promoting and establishing safety committees in both the public sector and those parts of the private sector within federal jurisdiction.

### **Legislative Analysis Division**

The Legislative Analysis Division collects and analyzes Canadian legislation affecting employer-employee relations and the work environment. The Division issues publications that report legislative developments in various areas such as occupational safety and health, workers' compensation and employment standards adopted in the Yukon and Northwest Territories, and federal legislation applicable in the Territories. It also prepares an annual report for the Canadian Association of Administrators of Labour Legislation (CAALL). This Association brings together representatives of the federal and provincial departments of labour and representatives from the two Territories. Finally, upon request, the Division provides government officials, organizations and individuals in the Territories with information on the labour legislation that exists within the various jurisdictions.

### **Plans for 1982-83**

Normal planning to meet responsibilities.

### **Employment Relations and Conditions of Work**

#### **Labour Education**

Labour Canada's Financial Assistance Program provides financial support to legally constituted union organizations in Canada. This support is used for the education and training of existing and potential union leaders, so that they can carry out their union responsibilities and fulfil their community roles effectively.

In 1981-82, the Northwest Territories Teachers' Association was awarded a labour education grant. The Association, which represents its 751 members, received \$488.00. The grant was applied to defraying the costs of a two-day conference to familiarize the Association's officers with the negotiation process, methods of handling grievances, government regulations and the structure and objectives of the Northwest Territories Teachers' Association.

**Plans for 1982-83**

Normal planning to meet responsibilities.

*Labour Data Branch*

Every year, the Labour Data Branch surveys the wages, salaries and conditions of work in establishments having 20 or more employees. The October 1981 survey covered 41 establishments in the Yukon Territory and 58 in the Northwest Territories. The survey will be carried out again in 1982.

The Branch continuously maintains information on work stoppages due to strikes and lockouts in the two Territories. In 1981, four work stoppages were reported. They involved 704 workers and a total of 49 426 person-days.

The Branch maintains a file of collective agreements, which includes 68 agreements (excluding agreements in construction) covering some 8 582 employees in the Territories.

**Plans for 1982-83**

Normal planning to meet responsibilities.

*Industrial Relations Information Service (IRIS)*

IRIS is a service intended primarily for those involved in labour relations and collective bargaining. It is a "one-stop" information service for parties on both sides of the bargaining table. They can turn to it for prompt answers to questions on industrial relations.

IRIS available to individuals and organizations in the Yukon and Northwest Territories. They may either call (819) 997-3117 (collect calls are accepted) or write to the following address:

Industrial Relations  
Information Service  
Labour Canada  
Ottawa, Ontario  
K1A 0J2

**Plans for 1982-83**

Normal planning to meet responsibilities.

*Quality of Working Life Program*

The Quality of Working Life Program encourages Canadian organizations that promote innovative practices that respond to changing economic and social conditions in the workplace. The Program supports, for example, organizations whose employees participate in decisions that affect them directly, or whose employees and management co-operate to improve working conditions. Program goals include increasing employee work satisfaction, making better use of human resources and improving relations between labour and management.

**Plans for 1982-83**

Normal planning to meet responsibilities.

Summary of Direct Northern Expenditures (000's)	\$	%
Total Forecast 1981/82	557	100.0
Expenditure by Northern Objective:		
Administration and Support	345	62.0
Social and Cultural Development	150	26.9
Quality of Life	62	11.1

# Department of National Defence

## *Responsibilities*

The Department of National Defence has responsibility for safeguarding the sovereignty and independence of Canada. In the North, the Department protects Canada against threats and challenges to its territorial integrity (including the integrity of the Canadian territorial sea and airspace) and contributes to collective security arrangements with allies in North America and NATO.

DND supplements and supports the efforts of civil departments and agencies of the government in discharging their responsibilities in the North.

## *Review of 1981-82*

### *Personnel Activities*

Canadian Forces recruiting teams from Vancouver, Edmonton, Winnipeg and Montreal gave employment and career briefings in twelve communities in the Yukon Territory and the Northwest Territories to ensure that northern residents continue to be aware of the training and career opportunities available to them in the Canadian Forces. Teams visited Whitehorse, Fort Smith, Hay River, Fort Simpson, Yellowknife, Cambridge Bay, Coppermine, Holman, Sachs Harbour, Inuvik, Norman Wells and Frobisher Bay. Twenty-one native applications were received for enrolment in the Canadian Forces. Twelve were subsequently enrolled, and three have since been released.

Native parents from Whitehorse, Watson Lake, Yellowknife, Fort Simpson, Fort Smith, and Frobisher Bay attended graduation ceremonies for their respective sons and daughters at the Canadian Forces Recruit School, Cornwallis, Nova Scotia. The Department of Indian and Northern Affairs provided financial assistance.

The Canadian Forces School of Aerospace and Ordnance Engineering at Canadian Forces Base Borden, Ontario conducted its eleventh consecutive annual seven-month course in aircraft mechanics for native northerners who will be employed by aircraft companies operating in the North.

### *Maritime Forces*

Argus and Aurora aircraft flew approximately 225 hours on Northern Patrols (NORPATs) in the Arctic in fiscal year 1981-82. Conversion from the Argus aircraft to the Aurora accounts for the low total NORPAT hours for the year. The NORPATs normally operate out of Frobisher Bay and Yellowknife, N.W.T. In addition to fulfilling their primary role of sovereignty surveillance, these patrols also met certain needs of various government agencies. For example, during the ice season, Transport Canada ice observers flew on the patrols and carried out ice reconnaissance. Other tasks included photographic work for the Department of Indian Affairs and Northern Development and the Department of Fisheries and Oceans, investigating off-shore oil exploration and drilling activity on the archipelago and reporting movements of animal populations. Scientists and observers from other government departments also flew with the patrols. They carried out activities such as investigating seabird and marine populations in the Beaufort Sea.



Florence MacIntosh, from Lake Laberge, Yukon attends graduation ceremonies of her son Ronnie at Canadian Forces Recruit School, Cornwallis, Nova Scotia in April 1981.

### *Land Forces*

During the 1970's, Mobile Command developed an extensive training program aimed at increasing its ability to concentrate forces anywhere in the North during any season and, at the same time, to exercise Canadian Sovereignty in the area. The result of this decade of training was the formulation of the Mobile Command Arctic Training Plan 1980-85.

The Arctic Training Plan emphasizes the development of the skills, experience, procedures and equipment, needed to permit Mobil Command forces to move tactically throughout the Arctic, using either vehicles or helicopters. The plan encompasses four interrelated programs: Exercise SOVEREIGN VIKING, the Scientific Research Support Program, the Arctic Technology Monitoring Program and the Mobil Command Arctic Operational Training Handbook.

Exercise SOVEREIGN VIKING is conducted exclusively in the high Arctic, with emphasis on the lands and seas lying along and north of the Northwest Passage. Two exercises are conducted annually — one during the summer months and the other in winter. The exercises last from eight to ten weeks. During these exercises, a number of long-range patrols mounted in vehicles are deployed from a support base. These patrols are supported by helicopters and long-range communications detachments.

A number of scientific teams have taken advantage of the Scientific Research Support Program. In August and September 1981, three university teams accompanied a SOVEREIGN VIKING exercise. The University of Windsor conducted a study of fresh water plankton in the pools on Cornwallis Island. A team from Memorial University of Newfoundland studied Arctic fish species and conducted a survey of the occurrence of pollutants, and the University of Laval studied the geomorphology and vegetation on Cornwallis Island.

In September 1981, two Mobile Command formations conducted reconnaissance exercises for senior officers. These exercises covered large portions of the North and involved meetings and briefings as well as visits to various communities.

In February 1982, 40 men of the Canadian Airborne Regiment marched from Coppermine to Port Radium. They were accompanied by three members of the Canadian Rangers.

### *Air Forces*

Air Transport Group Hercules aircraft provided weekly service flights in addition to special flights to support the Canadian Forces Communications Stations at Inuvik and Alert. During 1981-82, some 478 954 kg of general cargo were airlifted to Inuvik and 883 174 kg of construction material and general cargo to Alert.

Annual "Boxtop Operations" were conducted in April, August and November 1981. At these times, 399 378 kg of general stores, 2 377 772 litres of diesel fuel, 298 569 litres of JP4 and 88 298 litres of MSE gas were airlifted from Thule AFB, Greenland to CFS Alert.

During 1980-81, Hercules and Buffalo aircraft flew airlift support for various FMC Exercises in the high Arctic, the eastern Arctic and Melville Island areas.

Helicopters from 10 Tactical Air Group supported MCE mapping and charting activities on northern Baffin Island and the installation of microwave sites on Ellesmere Island. A total of 576 helicopter hours were flown in the high Arctic, in support of various aspects of northern development.

The 440 Squadron detachment at Yellowknife, N.W.T. was used for communications and Search and Rescue flights throughout the North.

The Distant Early Warning (DEW) Line, consisting of four main sites and seventeen auxiliary sites, continues to provide a military presence in the Arctic. These military installations stretch from Cape Dyer on the East Coast of Baffin Island to Komakuk Beach near the Alaskan Border. While all sites are operated by civilians under United States Air Force contract, Canadian Forces members are stationed at the main sites, as well as at airfields operated by the Department of Transport at Tuktoyaktuk, Hall Beach and Cambridge Bay.

Air Reserve activities in the north during 1981-82 included flights in the Baffin Island/Frobisher Bay area. These flights involved mapping and charting surveys and transporting militia personnel and cargo to various sites throughout the central Arctic in support of summer training. In addition, Air Reserve personnel transported passengers and equipment for 440 Squadron detachment at Yellowknife. ARAF personnel participated in Exercise Boxtop and provided personnel support to CFS Alert and flew 537 hours in support of a high Arctic project to improve communications facilities in the North.

During 1981-82, the Canadian Forces air demonstration team flew three air shows in the North at Whitehorse, Hay River and Yellowknife.

### *Military Engineering*

Construction activity included relocating the Atmospheric Environment Services (AES) Tank Farm at CFS Alert, and constructing two satellite earth stations and six microwave repeater sites between Eureka and Alert as part of Project Hurricane.

Major maintenance projects were the replacement of boilers and heating system components at CFS Inuvik, and repairs to the Exercise Sovereign Viking Camp at Resolute Bay. At Frobisher Bay, modifications were started on the Heating System of the Nose Dock Hangar.

During the summer of 1981, the Mapping and Charting Establishment (MCE) surveyed an area of approximately 105 000 square kilometres on Baffin Island, north of 68A4 latitude, including Bylot Island. A total of 35 horizontal control stations were established, 34 of which were determined using satellite (Doppler method) data, to geodetic second order standard. A total of 92 vertical control points were established. Low level aerial photography was flown to identify 112 existing and new horizontal and vertical stations. From this data, a total of approximately 120 maps at the scale of 1:50 000 will eventually be produced. Ten surveyors were involved in the survey, supported by ten aircrew and other personnel. Due to Exercise Rendezvous 81, no military aircraft were available. Two Bell 206L Jet Ranger aircraft from Canadian Helicopters Ltd. and a Twin Otter from Kenn Borek Air Ltd. were used for identification photography. Two CH 147 Chinook aircraft supported the fuel caching operation in early June, and four C 130 Hercules airlifts were used for deployment and redeployment.

The Department will provide engineering assistance to EMR for the construction of an ice runway in support of Operation CAESAR 83, which is the study of the Alpha Ridge of the Polar Continental Shelf.

At CFS Inuvik a no-break power supply system for the Operations Building is planned. The heating modifications at Frobisher Bay will be completed.

Maintenance projects at CFS Alert include roofing repairs to the Operations Building, an environmental clean-up, a heat recovery system for the diesel power plant, and an overhaul of the diesel generator.

The Mapping and Charting Establishment will conduct a major survey operation on Baffin Island to complete the Doppler survey of the area. Civilian chartered aircraft will again be used, supported by CF Hercules aircraft.

### **Plans for 1982-83**

#### **Personnel Activities**

Recruiting teams will continue to give military training, employment, and career briefings to native communities in the Yukon and Northwest Territories.

The Department at Canadian Forces Base Borden will offer another aircraft mechanics course for native northerners.

#### **Maritime Forces**

Tentative plans are being made to deploy an operational support ship and a diving support ship in the North during the summer of 1982.

During fiscal year 1982-83, sixteen Aurora sovereignty and surveillance patrols are expected to be flown in the Arctic. These will involve approximately 500 hours of flying time. Whenever possible, the patrols will continue to be used to provide various services to other government agencies.

#### **Land Forces**

Mobile Command will continue to carry out SOVEREIGN VIKING exercises as a method of developing and refining techniques for conducting operations in the North. Two reconnaissance exercises will take place in 1982 to acquaint senior staffs with northern communities and activities.

#### **Air Forces**

Hercules aircraft will continue to provide regularly scheduled service to Alert, Inuvik, Yellowknife and Whitehorse. They will also be used during the spring, summer and early fall to assist in the re-supply of Alert and various land forces exercises in the North. Both Hercules and helicopter aircraft will be used to carry out mapping and charting work in the high Arctic.

#### **Military Engineering**

The construction of a new Personnel Services Building for CFS Alert will begin with work on the footings and foundations. A freight storage building will be constructed at Alert. Approximately 10 km of road will be built in the Eureka area under Project Hurricane.

### **Research and Development**

#### **Responsibilities**

The Research and Development Branch formulates and implements departmental scientific policy and manages the Department's R&D program. The Branch is responsible for finding solutions to scientific and technological problems related to departmental operations and equipment. Research is undertaken on a variety of projects aimed at acquiring knowledge relevant to military operations in the North and testing and evaluating equipment and systems proposed for use in Arctic or other adverse environments.

#### **Review 1981-82**

The internal R&D program of the Department is conducted in its six research establishments. During 1981-82, five of these establishments were involved, to some degree, in research related to Northern activities, and a number of contracts were awarded to Canadian universities and industries in support of this research. In addition, the Military Engineering Research Group at the Royal Military College in Kingston (RMC/MERG) carries out research on problems associated with engineering in a Northern environment.

The Defence Research Establishment Pacific (DREP) carries out research aimed at developing effective methods for detecting submarines in Arctic waters. Activities in the North in 1981 included small expeditions to Nansen Sound in April and September and a large experimental operation in Barrow Strait and Jones Sound in August and September carried out with the help of the Canadian Coast Guard Ice Breaker CCGS J.A. MACDONALD. The work in Nansen Sound was performed by small field parties operating from the DREP camp located on the smaller Fjeldholmen Island. The work in Barrow Strait and Jones Sound was carried out by a party of DREP scientists operating from the CCGS J.A. MACDONALD, from existing DREP camps located at Gascoyne Inlet and on islets off Grise Fiord, and from a new camp established on the beach near Cape Hawes at the western end of Jones Sound.

A continuing activity initiated by the Defence Research Establishment Valcartier (DREV) consists of determining how storing the CRV7 rocket motor in a variety of climatic environments for long periods of time affects its service life. Motors are being stored at Canadian Forces Station (CFS) Alert as part of the trials. In support of the Department of the Environment, DREV completed work on an incendiary device for disposing of waste oil in the Arctic. This technology was transferred to industry. Development work was started on a prototype smoke marker for use in military search and rescue operations and in low altitude parachute extraction operations<sup>1</sup> in the Arctic environment.

<sup>1</sup>In a "parachute extraction" operation, parachutes are used to pull or "extract" loads from aircraft flying at low altitude.

Scientists in the Protective Sciences Division of the Defence Research Establishment Ottawa (DREO) are responsible for carrying out research on clothing and protective equipment for use in harsh environmental conditions. During 1981-82, research activities included: basic studies of heat and vapour transport in insulation; investigations to determine most effective distribution of insulation within sleeping bags and garments; design and testing of face masks for use in cold, windy conditions; and work on the "architecture" of tents and the design of inflatable structures.

DREO participated in Exercise Sovereign Viking in 1981 by distributing flashlights containing lithium-sulphur dioxide batteries for evaluation by Canadian Forces personnel working in the field. From questionnaires completed by users, it was evident that the lithium batteries lasted longer than standard issue batteries. DREO has recently been actively engaged in the development of a lithium battery for the AN/PRQ-501 Personnel Locator Beacon (PLB). It will provide the Canadian Forces with a PLB capability to meet the rigorous search and rescue requirements imposed by the severe climatic conditions of Canadian winters. The battery consists of four C-size lithium-sulphur dioxide cells and combines the attributes of small size, light weight, and high energy density with a -40° operational capability and a minimum shelf-life expectancy of four years. The battery unit is now in the pre-production stage of manufacture and should be available for use in 1983.

Over the past several years, the Defence Research Establishment Suffield (DRES) has sponsored work at the University of Alberta in northern geotechnical engineering. This work has involved investigations of the criteria for predicting the behaviour of underground caverns in permafrost and vibratory methods for driving piles and anchors in permafrost. This work has now been concluded and no further activity is planned in the foreseeable future.

Various research activities related to testing military vehicles in northern terrain continue to be pursued by DRES, both in-house and under contract. Specific activities include testing the performance of vehicles on snow and muskeg; terrain analysis, including investigations of remote sensing techniques for northern terrain and snow; and starting and operating military vehicles in cold regions.

Scientists at the Defence and Civil Institute of Environmental Medicine (DCIEM) carry out research designed to improve the protection and performance of military personnel. The Institute's activities include programs to investigate human response to stresses, such as extreme heat or cold, high altitude, and acceleration; physical fitness; aerospace life support systems; infection and immunity; and deep diving. Research projects also include behavioural and bioscience investigations relating to air, land and sea operations.

During 1981-82, DCIEM continued to study the physiological effects of exposure to cold under controlled laboratory conditions. The cold air climatic chamber was used extensively for investigating the fat loss of humans when exercising in the cold (PROJECT FLIC). The technique of breathing warm air during these exposures was developed and tested for its effectiveness in reducing the severity of the cold stress/exercise strain relationship. The investigation of human hypothermia continued and the effectiveness of various methods of re-warming was evaluated. Conclusions from these recently completed studies will be drawn when the experimental data have been analyzed.

The Institute also carried out experiments to develop a better index for predicting cold stress than the previously cited Siple's Wind Chill Index (WCI). A Cold Stress Index Meter was developed.

Ongoing research projects at RMC/MERG in 1981-82 included: studies of the freeze-thaw resistance of concrete, the construction of pavement over highly compressible terrain, soil stabilization for roads and runways in the North, ditching and cratering in frozen soils and the geothermal characteristics of continuous and non-continuous permafrost in the Canadian Arctic.

#### **Plans for 1982-83**

In April 1982, small field parties will be working from the DREP camps at Nansen Sound and Jones Sound and from ice camps on the Milne and Ward Hunt Ice Shelves (located on the northwest coast of Ellesmere Island). A modest operation is also planned for Jones Sound in August and September 1982 with the support of the CCGS J.A. MACDONALD or a Canadian Forces ship. This work will be carried out in the western end of Jones Sound.

DREV will continue the service life trials of the CRV7 rocket motor, involving storage of motors at CFS Alert, until approximately 1990. Development and laboratory testing will continue on the smoke marker for use in military search and rescue operations and in low altitude parachute extraction operations in the northern Arctic environment.

DRES will continue mobility research related to military land vehicles. This will include work on a transect near Shefferville, P.Q.

DRES plans Northern field trials in 1982 to test a new lithium battery designed at DREO and built under contract by Duracell. The battery will be used to power two pieces of Canadian Forces equipment: the radar transponder SST-181X-E and the HF manpack radio AN/PRC-515. DREO will also re-design the lead/acid battery type BB-248/U to meet new low-temperature performance goals. The battery must be able to start new, diesel-powered military vehicles under Arctic conditions. A contract demand has been sent to DSS and twenty prototype batteries are to be delivered by March 31, 1983.

DCIEM will continue to conduct research aimed at improving the protection and performance of the Canadian Forces in cold environments. Several reports dealing with physiological responses to cold and techniques for alleviating the attendant stress are expected to be published shortly. Production of the Cold Stress Index Meter developed at DCIEM is expected through a technology transfer contract with industry.

New research activities proposed at RMC/MERG include a study of waste water treatment in Arctic regions. This would involve fieldwork at Alert. Other proposed research includes extending a geothermal model to soil conditions at Alert to support the ongoing runway study.

#### *Research Contracts 1981-82*

Control Data Canada Ltd., Ottawa: Development and evaluation of algorithms required for acoustic detection systems in the Canadian Arctic (DREP).

University of Victoria: Electromagnetic modelling and field station studies of the coast effect in bays (DREP).

University of Victoria: Model study of the effects of surface motion in acoustic signals scattered by a rough surface (DREP).

Applied Microsystems Ltd., Victoria: Development of a submersible, low power digital tape recorder for remote data acquisition and storage (DREP).

Barrodale Computing Service, Victoria: Field data retrieval, editing and display systems (DREP).

Duracell Canada Ltd.: Military lithium-sulphur dioxide primary battery (DREO).

Carleton University: Development of a method for predicting the off-road performance of tracked vehicles (DRES).

McGill University: Development of a mobility model-terrain characteristics (DRES).

University of British Columbia: A study to determine the practical applications of laser profilometry in the evaluation of terrain for mobility modelling purposes (DRES).

#### **Summary of Direct Northern Expenditures (000's)**

	\$	%
<i>Total Forecast 1981/82</i>	47 151	100.0
<i>Expenditure by Northern Objective:</i>		
Sovereignty and Security	44 764	94.9
Quality of Life	1 836	3.9
Economic Growth	551	1.2

# National Energy Board

## **Responsibilities**

Under the National Energy Board Act of 1959 and subsequent amendments, the Board has two principal responsibilities: to regulate specific areas of the oil, gas and electrical utility industries in the public interest, and to advise the government on the development and use of energy resources.

The Board acts as a regulatory body by granting, with the approval of the Governor-in-Council, certificates of public convenience and necessity for constructing or operating interprovincial and international petroleum pipelines and international electric power lines. The Board also issues licences to export or import gas and to export oil or power. It issues safety orders for pipelines, regulates the rates, tolls, and tariffs charged by the oil and gas pipeline companies under the Board's jurisdiction and approves pipeline utility crossings.

In its advisory role, the Board may, on its own initiative, hold inquiries into particular energy-related matters and prepare reports for the government, Parliament and the general public. The Board also carries out studies and prepares reports at the request of the Minister of Energy, Mines and Resources.

In addition, it administers certain provisions of The Petroleum Administration Act. This Act, passed on June 19, 1975, empowers the federal government to impose a charge on the export of crude oil and certain petroleum products, to compensate petroleum importers for certain petroleum costs and to regulate the price of Canadian crude oil and natural gas in interprovincial and export trade.

## **Responsibilities under the Northern Pipeline Act**

The Northern Pipeline Act, passed on April 12, 1978, provides authority for the construction of a natural gas pipeline in Canada along the Alaska Highway. The Act also authorized the creation of the Northern Pipeline Agency to oversee the construction of the pipeline. The Board's responsibilities under the Act relate mainly to financing and tariffs, approving pipe specifications, granting leave to open orders and regulating the operation of the line.

## **Review of 1981 Operations**

### **Gas Pipeline Hearings**

#### *Foothills (Yukon) Pipeline*

In July 1980, the federal government approved construction of the southern portions (the "prebuild") of the Canadian sections of the Alaska Highway Natural Gas Pipeline.

In August 1981, the Board released its findings on a public hearing held in March and April concerning, among other matters, the tolls to be charged by Foothills Pipe Lines (Yukon) Ltd. in the operation of the western leg of the "prebuild". In addition, the hearing dealt with certain matters arising from the Board's 1979-1980 tariff hearings. These items had to be resolved before operation of the western leg could begin.

The hearing also focused on the Final Design Cost Estimates for the western and the eastern legs. The review was necessary before the Board would accept these estimates, which the Company would use to measure its cost control performance under the Incentive Rate of Return Scheme approved by the Board in its decision on the tariff hearing.

The total cost estimates as filed for the western and eastern legs totalled \$167 379 000 and \$653 942 000 respectively. These figures covered construction of 213 kilometres of pipeline and a meter station in the western leg and 635.4 kilometres of pipeline, three compressor stations, and a meter station in the eastern leg. The Board disallowed about 2 per cent of the estimates for the western leg and about 5 per cent for the eastern leg.

For rate base purposes, the Board authorized Foothills (Yukon) to include preliminary and construction expenditures incurred during the year ending December 31, 1980 totalling just over \$158 million, subject to certain adjustments.

#### *Arctic Pilot Project*

In June 1981, the Board announced that it intended to hold a public hearing no earlier than October 1st concerning an application by Arctic Pilot Project Inc. and an associated application by TransCanada PipeLines Limited. At the end of September, the Board announced that the hearing would start on November 24, 1981.

The Arctic Pilot Project application involves building a natural gas pipeline and liquefaction plant on Melville Island in the Arctic, the transportation of the liquefied natural gas (LNG) in ice-breaking tankers to an eastern Canadian port where the LNG would be regasified and, finally, the export of natural gas from Alberta to the United States.

The application by TransCanada Pipelines is for a certificate to authorize the construction and operation of the associated LNG receiving terminal and regasification plant. It would be located at either Gros Cacouna, Quebec, or Melford Point, Strait of Canso, Nova Scotia.

The Minister of Energy, Mines and Resources also asked the Board to thoroughly examine the entire project in addition to carrying out its regulatory responsibilities of licensing the gas for export and certificating the regasification plant. The Board was then to report on all matters relating to the necessity of the proposed terminal and regasification plant.

In September, Arctic Pilot Project Inc. amended its application by reducing the quantity of Alberta gas to be exported, to an amount equal to that supplied from the Arctic. Subsequently, the Board decided to hear the export component of the application, not as part of a future omnibus gas export hearing as had been announced, but together with all other aspects of the Arctic Pilot Project.

After the announcement of this decision, Inuit Tapirisat of Canada ("ITC") and the Baffin Region Inuit Association ("BRIA") brought a preliminary motion requesting, among other things, that TransCanada be required to elect between the Gros Cacouna, Quebec and Melford Point, N.S. terminal sites. ITC/BRIA requested that this motion be heard prior to the commencement of the public hearing of the Arctic Pilot Project. The Board, not seeing any urgency in the motion, refused this request. ITC/BRIA then brought an application under section 18 of the Federal Court Act for an order compelling the Board to hear its motion. Subsequently, the Board received other motions, which made it convenient to hold a preliminary sitting to begin November 2, 1981. ITC/BRIA were, therefore, invited to present their motion of September 25, 1981 at this time. As a result, ITC/BRIA did not proceed with their section 18 application.

Shortly after this, ITC/BRIA brought another application under section 18 of the Federal Court Act to quash the order of the Board including the export application with the other aspects of the Arctic Pilot Project and providing that the export application should be heard in Phase I. This application was argued October 29, 1981 and on November 2, 1981, the Federal Court of Canada, Trial Division dismissed the application.

In addition, ITC/BRIA applied to the Federal Court of Appeal on December 2, 1981 under Section 18(1) of the Act for leave to appeal the Board's decision of November 5, 1981 which refused ITC/BRIA's motion to require TransCanada to elect between the Gros Cacouna, Quebec and Melford Point, N.S. terminal sites. The application for leave to appeal is expected to be heard early in 1982.

## Oil Pipeline Hearings

### *Interprovincial Pipe Line (NW) Ltd.*

In April 1981, the Board rendered its decision recommending to the Governor in Council the issuance of a certificate of public convenience and necessity to Interprovincial Pipe Line (NW) Ltd. for the construction and operation of a buried oil pipeline from Norman Wells, Northwest Territories, to Zama, Alberta. The decision was reached following five weeks of public hearings in Edmonton, Yellowknife, and Ottawa.

The pipeline, 323.9 millimetres in diameter and some 866 km in length, is to be built at an estimated capital cost of \$360 million. It will be used to transport 5 000 cubic metres per day of crude oil and natural gas liquids produced by Esso Resources Canada Limited to existing Canadian markets. Installation of additional pumping capacity could raise the system's capability to approximately 7 150 cubic metres per day. To reach these volumes of production, Esso Resources proposed to expand the existing Norman Wells field and to use secondary recovery techniques.

The Board also issued a tariff order approving the form and content of the tariff for the transportation of petroleum from Norman Wells to Zama providing for a "full cost of service" tariff, including a 16 per cent return on equity.

Originally, IPL (NW) planned to have construction of the pipeline completed by the end of 1983 and proposed to start operations in early 1984. However, this schedule changed; on July 30, 1981, the government announced in approving the project that it required a two-year delay on the start of field construction, a two-and-a-half-year delay on the start of field construction and a two-and-a-half-year delay on the start of pipeline construction. This meant that work on the oilfield expansion would not begin until the summer of 1983 and that pipelaying would not begin until November 1983. The project would thus not become operational until mid-1985.

After receiving the approval of the Governor in Council, the Board issued Certificate No. OC-35 to IPL (NW) in November 1981. The certificate stipulates conditions that the Company must satisfy before construction may begin, including the necessity of submitting findings on field tests, financing arrangements, an environmental assessment, measures for minimizing the project's effects on wildlife and fish resources, and inspection and monitoring programs before, during, and after construction of the pipeline system.

### *Trans Mountain Pipe Line Company*

In April 1979, Trans Mountain Pipe Line Company Ltd. applied for a certificate of public convenience and necessity authorizing the construction and operation of a pipeline to transport Alaskan crude oil from the west coast to Edmonton, Alberta for trans-shipment to the northern part of the United States.

In June 1981, the Board announced that it was prepared to issue a certificate to Trans Mountain Pipe subject to Governor-in-Council approval, for the construction and operation of a 762 millimetre diameter crude oil pipeline approximately 927 kilometres in length extending from the International Boundary near Sumas, Washington to Edmonton.

In a previous report released in January 1980 on the Trans Mountain application, the Board concluded that there was insufficient evidence before it at that time to assess the marine and coastal environmental risks to Canada posed by the operation of a United States crude oil port and associated tanker traffic. Because of the possibility of damage to the marine environment, the Board was not prepared to grant a certificate for the Trans Mountain pipeline. Accordingly, Trans Mountain was given the opportunity to prepare evidence for a re-hearing limited to marine environmental impacts.

In rendering its decision based on new evidence presented at the re-hearing, the Board stressed that its mandate was to determine whether there was a reasonable likelihood that construction and operation of the pipeline would expose the marine and coastal environment of Canada's west coast to an unacceptable increase in the risk of oil spill damage. On the basis of the evidence, the Board concluded that the risk of oil spill damage from tankers in the inner waters of Puget Sound would be decreased if, as Trans Mountain proposed, a pipeline were built to supply the several U.S. Puget Sound refineries from a single port outside the Sound.

Certain conditions were set out in the Reasons for Decision. One required the Company, before starting construction of the pipeline in Canada, to file with the Board, copies of the appropriate United States regulatory authorizations for construction of the Low Point oil port and related pipeline facilities in the State of Washington. The Company also had to show to the satisfaction of the Board that the port and facilities would be used to supply all or part of the crude oil for the American Puget Sound refineries at Ferndale, Anacortes and Cherry Point.

In July 1981, Trans Mountain advised the Board that it had requested an indefinite postponement of a hearing before the Washington State Energy Site Evaluation Council into a west coast oil port stating: "The recent and continuing dramatic decrease in petroleum product demand in the United States has caused significant changes in supply and distribution patterns and in crude oil prices. Trans Mountain is now of the opinion that a major new oil pipeline cannot be financed under today's business conditions and consequently requested the postponement."

Under the circumstances, Trans Mountain requested that the Board not forward to the Governor-in-Council its decision on the certificate application until Trans Mountain was able to clarify the status of its application before authorities in the State of Washington. That is where the matter now stands.

### **Litigation**

A Decision of the Board released on April 22, 1981, granting a certificate of public convenience and necessity to Interprovincial Pipe Line (NW) Limited, permitted the Company to construct and operate an oil pipeline extending from Norman Wells, Northwest Territories to Zama, Alberta. The Board had conducted a public hearing, as it is required to do, on the application of Interprovincial. Four of the intervenors who had participated in this public hearing sought leave in the Federal Court to appeal the Board's decision to issue the Certificate. They argued that there was a notable lack of evidence, particularly with respect to environmental and regional socio-economic matters. It was further argued, first, that the Board had recognized and commented on this lack of environmental evidence in its Reasons for Judgement and, second, that this kind of evidence was necessary before the Board could issue the Certificate of Public Convenience and Necessity. Finally the intervenors argued that because of the fundamental, important and crucial nature of such evidence, they should have had the right to test it through cross-examination at the public hearings, reserving the right to reply to this evidence later, if they considered it necessary, by leading rebuttal evidence.

The application for leave to appeal was argued before the Federal Court of Appeal on June 17, 1981. The Court gave its judgement on June 30, 1981; it dismissed the application for leave to appeal. In doing so, the Court held that all of the matters that the Board had been dealt with by way of conditions in the certificate could properly have been dealt with in that way; that they were purely administrative matters not required to be dealt with as a part of the quasi-judicial public hearings; and that, in so dealing with these administrative matters, any duty by the Board to act fairly towards the applicants was undoubtedly discharged by the provisions providing for input by the intervenors with respect to compliance with those conditions. The Court held that the applicants had been given significant and substantial participation in the environmental and socio-economic areas of concern to them and as a result they had been dealt with fairly. The Court thus concluded that there was no reasonably arguable question of law or jurisdiction which the Court would be entitled to consider.

# National Film Board

## Responsibilities

The NFB's northern activities involve producing motion pictures, film loops, filmstrips, slide sets and still photo exhibits about the Canadian North, its people and their activities, its industries, resources and institutions. The Board distributes these materials about the North in other parts of Canada and abroad. Conversely, it distributes other materials about other parts of Canada within the North. The NFB advises federal government agencies about the audio-visual media and plans, produces and distributes departmental films for information, training and cultural purposes.

## Review 1981-82

The Board maintained its relationship with the Nunatsiakmiut Society of Frobisher Bay and provided administrative, financial, technical and training services. During the year, the Department of Indian and Northern Affairs ended its involvement in the joint undertaking. The Board continued to provide services such as transferring Super 8 material to videotape. The Society later edited the material in Frobisher Bay for telecast by the CBC Northern Service. The Society also began filming in 16mm with assistance from the Board.

During 1981-82, the Board continued to help Taqramiut Nipingat of Sugluk, Quebec to add Inuktitut language sound tracks to NFB films for telecast by satellite.

The Board continued to provide technical assistance to Cree communities in the James Bay area to establish a communications network. The first television cable and receiver system was licensed to the Mistassini Lake Communications Association during the year. During 1982-83, a series of film productions is planned, including television clips for satellite transmission to Cree Communities.

The Board worked with the Inuit Broadcasting Corporation, primarily in transferring Super 8 film to videotape.

The past year has seen a sharp increase in the amount of work that our Northwest Regional Studio carried out. The Studio participated in a film seminar on production and a joint CBC/Government of the Northwest Territories project held in Yellowknife. Discussions have also been held with CBC Yellowknife about a possible film co-production entitled *Folk on the Rock*. Two films are in production in the studio — *Northern Explorations* and *The Last Mooseskin Boat*. The latter is a co-production with the Native Communications Society of the Western N.W.T.

This year, the Ontario Regional Studio completed *Magic in the Sky*, a co-production with Investigative Productions. This film had support from the various sources, i.e., the Inuit Tapirisat of Canada, Secretary of State, the Department of Indian and Northern Affairs and the Department of Communications. The film is a one-hour documentary on Inukshuk, the first pilot Inuit television network. It looks at the impact of television on the Inuit and, by extension, the effect of the medium on similar societies and cultures.

The Multi-media Studio completed two slide sets in the series Canada's Visual History/Histoire du Canada en images entitled *Canadian Arctic Prehistory/La préhistoire de l'Arctique Canadien* and *Copper Eskimo/Les esquimaux de cuivre*. The Studio also completed a sound filmstrip in Inuktitut, *Peter Pitseolak — The Man Who Made Pictures*, and two programs for the Canadian School Telecasts, which were shown on the CBC. The first of these telecasts, *Salt Water Coasts — Arctic I* describes the exploits of the men who explored Canada's Arctic. The second, *Arctic II*, highlights the continuing search for a commercial sea route through the Northwest Passage.

During 1981-82, NFB French Production completed shooting the film *COOP* and began its editing stage (Producer: Maurice Bulbulian). *COOP* is a documentary feature film produced with the collaboration of representatives of the Inuit communities of Povungnituk, Iqviq and Sugluk. This film will be completed in 1982 and will be available in the original Inuit version and in English and French.

As well, a one-hour film entitled *Kluane National Park* was completed with the participation of Parks Canada.

## Northern B.C. and Yukon

Service to these areas is provided by two film libraries: the NFB library in Prince George and the library operated by the Yukon Territorial Government in Whitehorse. The Territorial library purchases prints from the NFB at cost and has a substantial inventory of NFB titles. It also receives back-up service from the NFB regional library in Vancouver. This back-up service is provided both directly to the main library in Whitehorse and to branch libraries in smaller communities. The service has given these communities access to the full range of NFB materials, and it has accounted for some 300 bookings in 1981-82. The NFB library in Prince George processed 12 000 bookings to users in Northern British Columbia.

In June 1981, several public screenings of NFB films were organized for the local population in conjunction with the NFB Board of Governors' Meeting in Whitehorse.

### Northwest Territories

Distribution activities in the Northwest Territories are co-ordinated from NFB offices in Edmonton and Ottawa.

The Edmonton NFB office, which services the Western Arctic, provided a supply of catalogues to the Dene National Office in Yellowknife this year. These catalogues were then distributed to every Dene community in the Western N.W.T.

The Board signed a major contract with the Department of Education of the Territorial government that has resulted in the opening up of the Department's film libraries to the general public throughout the N.W.T. As part of this contract, the NFB provides films to the Department's libraries at 50 per cent of the catalogue price. This agreement has enabled these libraries to acquire much more NFB film material and has resulted in better access to films for N.W.T. communities. Direct bookings to the Western Arctic from the Edmonton NFB office increased to approximately 1500 during 1981-82.

This year also saw the world premier of the NFB co-production *Magic in the Sky* at the International Native Communications Conference in Edmonton in February 1982. The Dene Nation in Yellowknife has decided to show this film at its annual general assembly in Fort Simpson in the Spring of 1982. In the upcoming fiscal year, the NFB will be organizing a three-day showcase of specially selected films at Inuvik for all Department of Education Audio-visual Supervisors. This event will focus on films related to N.W.T. curricula, archival films on the North and certain general interest titles.

The NFB office in Ottawa serves the Eastern Arctic (Baffin — Ellesmere region). This "outpost" service has 1000 prints, and this number will be increased in 1982-83 by transferring prints from other libraries. During the past twelve months, a total of about 500 bookings were made to the Eastern Arctic — a decrease from the previous year. Most of these films were used in adult education, nursing stations and schools. The CBC Northern Service previewed a number of films from our Ottawa office during the past year and purchased 13 for telecast to communities in the North.

In 1982-83, several new films sponsored by Indian and Northern Affairs will be released including *Canada's Eskimo Dog*, *Canada's Reindeer* and *Northern Games*. The NFB plans to promote these titles extensively throughout the North.

### Northern Quebec

Service to Northern Quebec is provided by the NFB Regional office in Montreal. In 1981-82, the number of letters received from the North requesting films and/or information nearly doubled from the previous year. This was due partly to the distribution of the new outpost catalogues (French and English) containing new NFB and CBC titles available for Northern distribution. The Kativik School Board and the Department of Indian and Northern Affairs helped to distribute these catalogues and promote the use of films in the area.

An informal "division of labour" was agreed on with the Kativik School Board (serving the Cree communities). It will concentrate on screening educational films in video format; the NFB will emphasize films of community interest. NFB 16mm films serve a dual purpose as they are routinely shown in the community centres as well as in the schools.

The NFB received a request from Nuuk, in Greenland, to use the Board's films as an aid to teaching Inuit crafts. The request came via Makivik (formerly the Northern Inuit Association). The NFB's Montreal office contacted the Canadian Embassy in Copenhagen, which despatched the films *Eskimo Artist Kenojuak* and *Living Stone* to the International Inuit Organization Company in Nuuk.

### Sponsor Programme Office

DIAND sponsored the production of *BIOS: The Baffin Island Oil Spill Project*, a video-tape in Inuktitut, English and French, that will inform Northern communities about the BIOS Project. DIAND and the Museum of Man participated financially in the production of the film *Summer at the Tree River Camp* by Graydon McCrea. The film is in English and Loucheux and shows the summer camp life of a Loucheux family from Arctic Red River, N.W.T.

DIAND and the Museum of Man participated financially in *The Last Mooseskin Boat*, a co-production of NFB's Northwest Studio and the Native Communications Society of the N.W.T. The film documents the construction of a mooseskin boat by Mountain Dene in the Mackenzie mountains of the N.W.T.

Through the NFB's network of libraries, DIAND is sponsoring the distribution of three films: *Northern Games* a film about traditional Inuit games, and two others — *Canada's Reindeer* and *Qimmiq, Canada's Eskimo Dog*.

### Plans for 1982-83

The NFB plans several productions for 1982-83. The Northwest Regional Studio plans a film on the Peace-Athabasca Project in northern Alberta. This film is concerned with how the mega-projects in the tar sands area will affect native peoples. The Atlantic Regional Studio is considering the production of a half-hour documentary on the 18th century Moravian Missionaries from Germany and their impact on Inuit culture.

The Multi-media Studio has plans to complete 3 filmstrips in the series *Firearms Safety* — *Firearms Safety*, *Indian Hunting Traditions*, and *Inuit Hunting Traditions*.

Also in the planning stage is a series entitled *The World of the North*, consisting of six one-hour films focusing on the world of the Arctic as seen through the eyes of Canadian author, Farley Mowat.

A most ambitious project is now in production — a series of documentary films on the scientific knowledge of the inhabitants before the arrival of the white man on Canadian soil. This project, still in the early stages, could be completed in the fiscal year 1982-83.

# National Museums of Canada

## National Programmes

### *Canadian Conservation Institute*

#### **Responsibilities**

The Canadian Conservation Institute (CCI), of the National Museums of Canada helps publicly-owned museums, galleries, and archives to protect their collections against deterioration. CCI combines scientific research with applied conservation techniques in its laboratories in Ottawa and operates mobile laboratories across Canada. As well, the Institute provides advice on all matters from the care of artifacts to maintaining proper environmental conditions within institutions. It offers free lectures, workshops, and seminars.

#### **Review 1981-82**

Through the mobile conservation laboratory service, the Institute provided on-site conservation assistance to a number of museums in the North. Artifacts were treated and museum personnel were shown how to care for and store their collections properly.

Staff from the Institute visited the Yukon Territorial Archives, where they spent several weeks treating objects in the collection. Lectures and demonstrations were given on how to care for archival materials. At the Institute's laboratories in Ottawa, scientific examinations of artifacts recovered from excavations in the Yukon and the Northwest Territories were conducted, and conservation treatments were performed on them.

#### **Plans for 1982-83**

Work on the scientific examination and conservation of artifacts composed of organic materials recovered from excavations at Dealy Island will continue at the headquarters laboratory. CCI will continue to advise museum personnel in both the Yukon and the Northwest Territories on the proper care, handling, display, and storage of their collections.

The Institute will provide expertise in conservation during archaeological field work that the Government of the Northwest Territories is carrying out.

### *Museum Assistance Programs*

#### **Responsibilities**

The Museum Assistance Programs provide financial and technical assistance to Canadian museums and related institutions. The programs' objectives are, first, to help these organizations to preserve the objects and collections that form Canada's natural, cultural and technological heritage and, second, to increase public access to these materials. These programs provide different kinds of assistance. Specifically, help is available to register collections; train museum personnel; prepare, produce and circulate exhibitions; employ conservators; purchase equipment and upgrade facilities. Assistance is also available for planning and special projects and for public programming activities of Associate Museums and National Exhibition Centres.



Native Woman and Child in Fort McPherson, Northwest Territories, Summer, 1981.

### **Review of 1981-82**

A grant of \$9 000 enabled the Inuit Cultural Institute to examine the feasibility of establishing a museum of Inuit history at Eskimo Point. Planning for the project is continuing.

A grant of \$13 500 was allocated to the Fédération des coopératives du Nouveau-Québec toward funding the exhibition "Things Made by the Inuit".

### **Plans for 1982-83**

A grant of \$20 000 has been committed for the 1982-83 public programming activities of the Northern Life Museum and Exhibition Centre in Fort Smith.

The exhibition *Peter Pitseolak* produced by the McCord Museum, Montreal, will tour 33 Inuit communities in New Québec, Baffin Island, the Keewatin District and the Northwest Territories. The Museum Assistance Programmes have contributed \$49 700 towards this tour.

### **Mobile Exhibits Program**

#### **Responsibilities**

The Mobile Exhibits Program operates three Museumobiles and exhibits artifacts and related materials mainly in smaller communities across Canada that do not have ready access to major museums. The Program began with a single trailer in 1973. It now operates three caravans of three trailers each. Each Museumobile caravan, consisting of three 13-metre trailers, depicts the geographic, archaeological, social and natural history of a region of Canada.

The Museumobiles are funded, designed, constructed and operated by the National Museums of Canada. Associate Museums in each region participate in the development of the storylines and the provision of artifacts. Museumobile caravans telling the stories of Canada North, Canada West and Atlantic Canada are currently visiting community centres, schools, homes for the elderly, correctional institutions, shopping plazas and other locations in Central Canada, Western Canada and Quebec.

### **Review 1981-82**

The Minister of Justice and Public Services, the Honourable George Braden, formally invited the Atlantic Canada Museumobile to tour the Northwest Territories. The tour took place from August to October 1981, and was divided into two phases: In phase one, the caravan stopped at 11 sites in the Dempster Highway and the Yellowknife/Great Slave Lake Region. The second phase was an extension program called *Outreach*, in which staff visited a number of northern communities that are inaccessible by road. They travelled mainly in Twin Otter airplanes and were billeted through the auspices of the Ministry of Education.

The Outreach programme visited 11 settlements, presenting informative and entertaining lectures, slide shows, artifact displays and discussions.

By the time the tour had been completed, the Museumobile had logged 10 000 km in 12 weeks and had been visited by 24 563 visitors — 75 per cent of the population to whom the program was made accessible.

### **National Museum of Man**

#### *Canadian Ethnology Service*

#### **Responsibilities**

The Canadian Ethnology Service documents the cultural heritage of the aboriginal peoples of Canada. This work includes carrying out research, building and analyzing collections and distributing information on the ethnographic, linguistic, and material culture of the Indian, Inuit and Métis peoples of the Yukon and Northwest Territories.

### **Review 1981-82**

Staff research focused on Athapaskan land use, material culture, Athapaskan-Inuit interrelationships, Inuit transportation and changing patterns of subsistence.

Research projects contracted through the Urgent Ethnology program included: an examination of Inuit space-time in Igloodik, N.W.T. and linguistic research on the Athapaskan dialect of Dogrib as spoken in Lac La Martre, N.W.T.

### **Plans for 1982-83**

Staff research will focus both on Athapaskan land use, material culture and changes and music.

Field contract research will focus on Athapaskan beadwork, Dogrib linguistics, Sekani linguistics, Beaver Indian traditions and their responses to industrial development. It will also concentrate on investigating Athapaskan post-contact clothing traditions and sewing techniques, and kinship as a demographic and ecological integrator among east Baffin Island Inuit. Finally, research will involve collecting Inuit oral history relating to their own whaling activity and that of others in the Hudson Straits and Hudson Bay.

#### *Archaeological Survey of Canada*

#### **Responsibilities**

The Survey undertakes research and rescue archaeology pertaining to the prehistoric occupation of Canada.

### **Review 1981-82**

The Rescue Archaeology Program participated in seven projects in the Yukon Territory, and the Northwest Territories.

A joint archaeological inventory project was carried out by DIAND, the Yukon Government and the National Museum of Man (NMM). S. Greer from the University of Toronto directed the project, which was carried out in the MacMillan Pass area as part of the Yukon Resource Inventory Program's second season. A second, complementary project was carried out under the joint auspices of DIAND and the NMM. It was directed by R. Gotthardt (University of Toronto) and consisted of a study to assess the archaeological impact of the proposed North Canol Road reconstruction project.



Woman's inner parka - from Rankin Inlet, Northwest Territories. Eskimo Caribou. Made in 1975 except breastplate, c. 1937. Collection of the Canadian Ethnology Service, National Museum of Man.

In the Northwest Territories, S. Greer briefly examined a borrow pit operation at Fort Franklin. D. Morrison (formerly of the University of Toronto, and now with the ASCNMM) carried out impact assessment studies in the vicinity of the Repulse Bay airport and at a mining operation on Contwoyto Lake. J.W. Helmer (University of Calgary), and U. Linnemae (University of Saskatchewan) respectively examined airport construction at Gjoa Haven, and borrow pit operations at Rankin Inlet. Finally, for a third season, E. Bielawski (Prince of Wales Northern Heritage Centre) directed the Northern Heritage Project field school at Stanwell-Fletcher Lake, Somerset Island. All of these projects were carried out at the request of the N.W.T. and were supported by N.W.T., Transport Canada, the NMM, and, in one instance, private industry.

### Research

Further excavation work was carried out at the Late Pleistocene Bluefish Caves site in the northern Yukon interior. A series of preliminary reconnaissance surveys also resulted in the discovery of more caves and rock shelters. These discoveries also led to the investigation of a number of karst features (dolines) for the purpose of regional, paleoenvironmental reconstruction.

This work was carried out as a major component of another project — NEBRIA (Northeastern Beringian Refugium: interdisciplinary approaches). This project was organized and field directed by the ASC with the support of various agencies such as the GSC, the University of Toronto, the Polar Continental Shelf Project, and the NMM. Close to 40 researchers and scientific visitors from both government and private institutions also participated in the project.

Continued work on Pleistocene exposures in northern Yukon Territory represented an extension of the previous field work done as part of the Yukon Refugium Project. New data concerning archaeology, vertebrate paleontology, tephrochronology, pedology, and stratigraphy were collected at five exposures in Old Crow Basin, at four sections in Bluefish Basin, and at one Bell Basin location. The first of four major papers on this work appeared in the December 1981 issue of *Arctic*.

A month long survey of the Mosquito, Sid and Mary Lakes region of the S.E. District of Mackenzie, N.W.T. was undertaken in July 1981. In all, 64 archaeological sites were found, including a stratified site bearing 3 intact levels and adjacent blowout deposits of Shield Archaic, Pre-Dorset and Taltcheil artifacts. Three radiocarbon samples were collected, including one from a Pre-Dorset hearth. The 64 sites link the previously surveyed Thelon and Dubawnt valleys, forming a clearer picture of the migratory nature of man and caribou in the barrenlands.

### Plans for 1982-83

Mr. David Morrison will carry out an archaeological survey in the central District of Mackenzie of the N.W.T. He will search for the remains of prehistoric Indian culture.

ASC will continue its participation in working to rescue archaeological sites threatened by natural processes and human activities.

## National Museum of Natural Sciences

### *Botany Division*

#### **Responsibilities**

Although the Botany Division has no long-term program of research in the North, it contributes to the knowledge of boreal and Arctic plant species in Canada through botanical surveys, field research programs and the maintenance of the National Herbarium. The Herbarium is a collection of more than 750 000 plant specimens. Research is conducted in plant systematics, taxonomy and phytogeography. The Division co-operates with scientists of other government agencies and countries interested in the North.

In 1980, a project was proposed to produce a small manual of "Arctic Wildflowers" for use of persons visiting the Arctic regions during the summer season. Although the late Dr. A.E. Porsild prepared an illustrated flora of the Canadian Arctic Archipelago several years ago, the flora is of a technical nature and the illustrations are black and white line drawings. The manual is based upon a concept that involves producing a series of coloured photographs of the most "showy" Arctic flowering plants. Non-technical information would accompany the photographs of the various plants. The inconspicuous species are to be omitted. The original plan was to obtain as many photographs as possible in two seasons. The first season's photographic work has been completed. For each plant photographed, a "voucher" specimen has been collected to ensure that the plant has been correctly identified. These specimens are to be deposited in the National Herbarium for safe keeping.

The originator of this project, Dr. John M. Gillett, is Curator of the National Herbarium of Canada, and the photographer is Mr. Harry Foster, National Museums of Canada.

#### **Review of 1981-82**

As indicated above, the objective was to obtain colour photographs for the manual of wildflowers with accompanying herbarium specimen vouchers. Work was carried out during the period July 17-31, 1981 at Tuktoyaktuk and at Sachs Harbour, N.W.T. The party worked at Tuktoyaktuk from July 17-23rd and at Sachs Harbour from July 23-29, 1981.

In addition to the voucher specimens collected when photographs were taken, 137 plant specimens for the plant exchange program were collected from Tuktoyaktuk and 157 from Sachs Harbour. Several samples of each plant were collected.

#### **Plans for 1982-83**

Most of the specimens collected during the summer of 1981 have been identified, and the photographs have been developed and sorted. Some specimens remain to be identified and co-ordination of photographs and specimens is yet to be done.

The 1981 sortie was designed to obtain most of the western Arctic species. During the summer of 1982 a further visit to Frobisher Bay, N.W.T. to gather plants from the eastern Arctic is planned.

Because of variation in flowering time and climate, it may not be possible to obtain enough photographs in two seasons, given that only two weeks have been allowed in each locality. However, if samples of enough species for publication purposes, can be collected within the time available, then the manual will be published. If more photographs are required, then another manual could be planned for future years.

### *Vertebrate Zoology Division*

#### **Responsibilities**

The Vertebrate Zoology Division contributes to the knowledge of animal species in Canada through carrying out comprehensive faunal surveys and field research programs. The Division maintains important collections, and does research in systematics, taxonomy, and zoogeography. It also co-operates with scientists of other government agencies and countries interested in the North.

#### **Vertebrate Ethology Section**

The Vertebrate Ethology Section carries out detailed, long-term studies of the behaviour of vertebrates, particularly birds and mammals. Since 1968, this Section has carried out studies of the relationships between species of Arctic animals and the behavioural adaptations that enable them to survive in High Arctic conditions. Most of the field research has taken place at the National Museum of Natural Sciences High Arctic Research Station at Polar Bear Pass on Bathurst Island, Northwest Territories.

#### **Review of 1981-82**

In Vertebrate Ethology, scientists used the High Arctic Research Station for brief monitoring visits and as a base for projects conducted elsewhere.

Field research was carried out in April and August on Bathurst and Ellesmere Islands as part of the last phase of the long-term study of muskox behaviour in the Arctic islands. In an attempt to fully document muskox behaviour during the calving and rutting seasons, more than 24 hours of 16mm film and 5 reels of sound tape were acquired. In both research areas (Polar Bear Pass and Sverdrup Pass) most females were accompanied by calves, and the survival of last year's calves was good. Courtship activities were intensive in both areas in August. Film and sound recordings obtained in 1981 will be used, along with material from previous years, in a documentary film on muskox behaviour.

The travelling exhibit based on the muskox research project, *Omingmak, The Muskox* was on display in Fort Smith and Yellowknife, N.W.T. from October 1981 to March 1982. The annual investigations of nesting Ross's Gulls and sea birds associated with the polynias in Penny Strait were continued. Only one pair of Ross's Gulls was present. Their nest had recently been predated, presumably by polar bears, but the birds remained strongly territorial and "incubated" two egg-sized stones in the nest. Common Eiders which also nest on islets in Penny Strait were much reduced in numbers, and nest predation by bears was much in evidence.

Exploratory studies of the Ivory Gull colonies on the Ellesmere ice cap were begun in collaboration with Dr. Vernon Thomas of the University of Guelph. This program combines animal behavioural adaptations, physiology, and histology.

#### **Plans 1982-83**

With the end of active field research on muskox behaviour, the emphasis will shift to publishing results and the co-production of the documentary films.

The annual census of the rare Ross's Gull is planned for islets in Penny Strait, Queen's Channel, and McDougal Sound. At the same time, observations on utilization and breeding success of sea birds will be carried out.

Extensive banding and colour marking of Ivory Gulls is scheduled to take place at Grise Fiord prior to examining the colonies located on nunataks in the Ellesmere ice cap. This program should give some indication of how an abundant food supply at this native village might influence either the success of the nesting gulls, or the location of Ivory Gull colonies.

Operations at the High Arctic Research Station at Polar Bear Pass, Bathurst Island will be limited to maintaining the laboratory building and other structures.

#### **Summary of Direct Northern Expenditures (000's)**

	\$	%
<i>Total Forecast 1981/82</i>	276	100.0
<i>Expenditure by Northern Objective:</i>		
Social and Cultural Development	276	100.0

# National Research Council

This vertical-axis wind turbine, now being tested near Churchill, Manitoba, could offer remote northern communities a cost competitive source of electricity. NRC, which is responsible for co-ordinating Canadian R&D on renewable sources of energy, is testing such wind turbines at various locations in Canada, and this testing will continue in 1982-83.



## Division of Electrical Engineering

### *Review of 1981-82*

The Division began to measure the thickness of sea-ice from helicopters. It continued to review the literature on this topic and monitored other Canadian ice-related research. Trials with a related video-pulse radar operating in the 10MHz region showed that the unit lacked sufficient transmitter power and receiver sensitivity. Since these problems could not be resolved in an economically viable way, work on this radar was stopped. A comprehensive report on the unit was published in February 1982.

### *Plans for 1982-83*

The review of literature and monitoring of Canadian developments will continue.

## Arctic Vessel and Marine Research Institute

### *Review 1981-1982*

The facilities of the Arctic vessel and Marine Research Institute of the National Research Council have been increasingly in demand by private companies and government departments involved in the development of Canadian Arctic resources. Designing oil drilling and production structures for use in the North poses certain challenges. The structures must be capable of being safely moved from the South, where they are built, to the North. Structures must then be able to withstand the harsh Arctic climate after being placed in service. During the past year, the Institute has been working on models of two such structures, each unique in design. Tests have been carried out to determine the tow-forces needed to move the structures to the northern latitudes and under what sea conditions they can be safely towed.

The Institute has also been much involved in the design of vessels capable of operating safely and efficiently in ice-covered waters. Studies were conducted on an 83 metre long vessel designed to service navigation aids under these conditions. Experiments were carried out to compare the manoeuvrability of this vessel when operated with single and twin-rudder configurations. Tests were also carried out to determine the effect of installing a passive stabilizer tank. The vessel's efficiency was determined under a range of sea conditions. Trials were carried out with the ship in open water and when overcoming resistance from ice.

The institute has been investigating the effects of ice on the propellers of ships. Experiments were carried out on a model of a triple-screw Arctic Class 7 design. It was modified with features to shield the propellers from ice. The wake then was analyzed to enable special propellers to be designed.

In 1981 the Institute completed the analysis of data obtained during the probe of Lake Melville by the CCGS Franklin in the 1979 to 1980 winter. The probe was made to test the ship's performance in heavy ice. In 1980-81, the Arctic Class 2 Bulk Carrier M.V. Arctic travelled into Lake Melville to establish her performance under similar conditions. The object of these trials was to establish the limits of ship performance in the area without icebreaker support. In this project, carried out jointly with industry and other government departments, NRC was responsible for measuring ice strength and for carrying out ice crystallographic studies.

The Institute played a leading role in organizing a successful Society of Naval Architects and Marine Engineers' Spring Meeting/STAR Symposium "ICE TECH 81" held in Ottawa in June 1981. Twenty-seven papers were presented, many of whose authors are internationally renowned for their work in arctic marine transportation. Approximately 400 delegates attended from all parts of Canada, the United States and abroad.

Copies of the Symposium Proceedings are available from the Society and supplementary proceedings containing the discussions and authors' replies will be available shortly.

Construction has progressed on new laboratories for the Institute in St. John's, Newfoundland. New personnel have been hired and the number of projects has been expanded.

#### **Plans for 1982-1983**

More work in arctic vessel design development, both in-house and by contract is planned for the coming year.

The Institute is starting to investigate the design of an icebreaking LNG carrier. Various bow-stern combinations will initially be tested in clear water where their propulsive performance under simulated icebreaking conditions will be established.

### **Division of Chemistry**

#### **Review 1981-82**

Natural gas hydrates are solid combinations of natural gas and water, which occur in considerable quantities in and below the permafrost in northern Canada. Laboratory studies of the physical properties of gas hydrates have now established that their thermal conductivity is only about one-quarter of that of ice. This knowledge is useful in detecting and estimating the quantity of hydrates.

#### **Plans for 1982-83**

The Division will continue its experimental studies of gas hydrates. This work will emphasize studies on their calorimetric properties.

### **Hydraulics Laboratory**

#### **Review 1981-82**

The Hydraulics Laboratory has been using its refrigerated model test basin (tank size 21 m x 7 m x 1.2 m) to document the mechanical properties of carbamide (urea) model ice. This information is required in order to be able to interpret model test results of ice-structure interactions which involve mixed-mode failure conditions.

The Laboratory carried out a series of tests on fine-grained columnar fresh-water ice to measure the compressive, flexural and shear strength of ice under identical conditions of ice type, grain size, loading rate and test temperature. The results compare the different failure modes of ice and serve as baseline values for similar tests on sea ice.

In conjunction with the Geotechnical Section of the Division of Building Research (NRC), the mechanical properties of the ice in the rubble-field around Tarsiut Island were measured.

#### **Plans for 1982-83**

The main carriage, rack and rails for the refrigerated model test basin in the Hydraulics Laboratory have now been manufactured and are being installed. When complete, model testing of the dynamic interaction between an ice sheet and various structures will be performed.

### **Division of Building Research**

#### **Review 1981-82**

The Division measured permafrost ground temperatures at several sites in northern Manitoba, the District of Keewatin, N.W.T. and at Alert, N.W.T. Investigations were conducted at several locations in the Y.T. and the N.W.T. in a continuing study to assess the long-term performance of insulated and uninsulated road and airfield embankments constructed on permafrost. Studies of bridge foundations on the Dempster Highway, Y.T. and of building foundations at Inuvik and Alert, N.W.T. were continued. Observations were made regularly on sewer and water lines at Dawson City, Y.T. to assess design and construction methods for utility systems buried in permafrost. The Division provided assistance to the Department of Indian and Northern Affairs in evaluating the geotechnical aspects of artificial drilling islands constructed in the Beaufort Sea.

Planning began for full-scale, long-term tests of various types of foundations in permafrost to be conducted at an Inuvik test site. Laboratory studies of the thermal and mechanical properties and the deformation behaviour of frozen soils and model piles in frozen ground were continued.

Laboratory research continued on the effects of frost on the operation of buried chilled gas pipelines in unfrozen areas of the discontinuous permafrost zone. These studies have explored the interrelationship of pressure, freezing temperature and heave rate. They have made it possible to interpret heave rates in evaluating the susceptibility of soils to frost. In conjunction with this work, the Division continued to carry out numerical and laboratory model studies of frost heave and the use of heating cables with chilled gas pipelines.

Laboratory and field studies of saline ice characteristics and behaviour continued. The Division also continued its work to determine how growth conditions have influenced the grain structure and salinity of first-year sea ice from Pond Inlet. Field measurements of the compressive strength of sea ice were carried out at Pond Inlet and Mould Bay. Studies on the behaviour of ice around a small island (Adams Island) at the intersection of Navy Board Inlet and Lancaster Sound were initiated. Studies to determine the interaction processes and mechanical properties of ice were carried out around the caisson-retained drilling island at Tarsiut in the Beaufort Sea.

#### **Plans for 1982-83**

The Division will continue to carry out field studies on foundations for various structures built on permafrost and also on the interaction between floating ice and structures. Planning for long-term experiments at the Inuvik foundation test site will be continued. The measurement of permafrost ground temperatures at different locations will be continued. Field observations and measurements of ice interactions will be continued at Adams Island.

Laboratory studies of frozen ground, frost action in soils, sea ice and permafrost foundations will continue.

Many of the Division's research projects on the thermal and moisture performance of buildings in a cold climate are directly relevant to the construction and use of housing and small buildings in the North. These projects will continue.

## National Aeronautical Establishment/Division of Energy R&D.

### *Wind Energy Program*

An agreement has been negotiated between the National Research Council and the Churchill Research Centre for a joint project to test and evaluate a 50 kW Vertical Axis Wind Turbine. The system was built and commissioned in October 1981, and the power generated is fed directly into the Churchill electrical distribution system. The installation is one of several across Canada aimed at evaluating the performance and operation of the NRC-developed VAWT under the environmental and other conditions prevailing at the various sites. This unit will provide information on the applicability of current VAWT designs to Northern climates.

There is considerable interest in the North in converting wind energy to electrical energy because of increasing costs of diesel fuel. Enquiries for similar projects in the Yukon and the Northwest Territories are being considered under the framework of the federal/territorial agreement on conservation and renewable energy development, and in conjunction with the Northern Canada Power Commission.

### *Aerial Magnetic Reconnaissance*

Aerial magnetic reconnaissance of the water areas of the Eastern High Arctic, ranging from Baffin Island to the North Pole, continued during April 1982. This year two areas will be surveyed: (1) the Kane Basin and Kennedy-Robeson Channel which is located between northern Greenland and Ellesmere Island, and (2) the Canadian sector of the Arctic Ocean adjacent to the north and northwest side of Ellesmere Island.

## Division of Physics

### *Review 1978-1982*

A joint project with Environment Canada and the Technological Universities of Zurich and Vienna produced stereo-orthophotos at scales 1:5000 and 1:10,000 of various glaciers on Axel Heiberg Island N.W.T. from photographs taken during the summer of 1977. These glaciers were earlier mapped by the Photogrammetric Research Section from photographs taken in 1961. One of the purposes of the project is to monitor the changes in the snow and ice cover over the 1961-1977 period.

### *Plans for 1982-1983*

The co-ordination of the glaciological and cartographic aspects of the project at the University of Zurich was delayed by the death of Dr. F. Muller, who had initiated the project. The acting Head of the Glaciology Department of the University of Zurich visited NRC in May 1981 and will appoint a glaciologist to carry on Dr. Muller's work.

## Canada Centre for Space Science

### *Review 1981-82*

A joint NASA/NRC rocket and ground-based observational project took place during the period November 1981 to January 1982. The project called "CENTAUR", involved launching two Canadian and four American rockets from Cape Parry (N.W.T.), and installing and operating a ground observation station at Sachs Harbour (N.W.T.).

A total of six sounding rockets were launched from the Churchill Research Range, Churchill, Manitoba. Five of these launches were conducted on behalf of NASA with one flight in support of the Canadian Space Science Program.



From its facilities at Churchill, Manitoba, NRC's Canada Center for Space Science is conducting many experiments using scientific rockets and balloons, in collaboration with Canadian and foreign space scientists.

The Centre has begun to implement its CANOPUS project — a chain of ground-based stations for making geomagnetic and ionospheric observations — at approximately 18 sites in the Yukon, the Northwest Territories and northern areas in Saskatchewan, Manitoba, Ontario and Québec. The first phase of CANOPUS consists of installing instruments at 13 sites. Most of these sites have been chosen or are being acquired and will be close to communities and on federal or provincial land. The choosing of the remaining five sites will be delayed for several years depending upon data requirements and co-operative exchange agreements.

### *Plans for 1982-83*

It is expected that rocket support for 1982-83 at the Churchill Research Range will consist of two Canadian rockets and three from the United States (NASA).

Specifications for the CANOPUS site preparations, including a modest structure at each, are complete. Site work is scheduled for the summer of 1983, with operations expected to begin by mid-1984.

## Herzberg Institute of Astrophysics

### *Review 1981-82*

Continuous monitoring of cosmic ray intensities was carried out at Alert and Inuvik in the Northwest Territories as part of an international, worldwide program. The data are sent regularly to the World Data Center for distribution to scientists.

### *Plans for 1982-83*

The cosmic ray monitoring program will continue at the same level.

# Northern Canada Power Commission

The Northern Canada Power Commission (NCPC), a Federal Crown Corporation, operates under authority of the Northern Canada Power Commission Act. It is concerned with the planning, construction and management of public utilities (primarily electrical) on a commercial basis. For this purpose, it has the authority to survey utility requirements and to construct utility plants in the Northwest Territories and the Yukon Territory.

The Commission produces most of the electrical energy in northern Canada and operates the main transmission networks in the Yukon and N.W.T. It also operates community heating, water and sewerage systems in several locations.

The authorizing Act requires the Commission's operations to be self-sustaining within each rate zone as defined in the Act. Accordingly, the rates that the Commission charges for utilities must provide enough revenue to cover interest on investment and repayment of any loans made to acquire assets. These rates must also cover operating, maintenance and administrative expenses, and enable the Commission to maintain a contingency allowance to meet unforeseen or emergency expenditures.

## *Review of 1981-82*

During the 1981-82 fiscal year, the Commission provided retail electric utility service to 49 communities in the N.W.T. and to 4 in Yukon as well as to customers in Field, British Columbia. The Commission also supplied wholesale electrical energy to the local electrical distributors in Yellowknife, N.W.T. and Whitehorse, Haines Junction, Ross River, Carmacks and Keno City, Y.T. This service was provided from 7 hydro-electric plants and 52 diesel-electric plants located in the general vicinity of the communities receiving electrical service.

The Commission also supplied retail central heat, water and sewer service in Inuvik, N.W.T., as well as wholesale central heat service to the Government of the Northwest Territories at Frobisher Bay, N.W.T. In the interest of conserving energy and operating efficiently, the Commission provided waste heat from its diesel generating plants to various customers during the year at Dawson City, Y.T. Cambridge Bay, Igloolik and Rankin Inlet, N.W.T.

A task force was set up in January 1981 to study the energy situation in the North. This group consisted of representatives from EMR, DIAND, NCPC and the two Territorial Governments. In a series of meetings, the task force explored energy supply, demand and pricing in the regions. It then analyzed the data and proposed a number of options to resolve various energy-related problems. In December of 1981 the task force completed a draft policy document which is now in the hands of each of the participants.

The Commission participated in and was the subject of an inquiry conducted by a special Sub-committee of the Standing Committee of Indian Affairs and Northern Development and chaired by Mr. Keith Penner. The Sub-committee examined all aspects of the Commission's operations and held hearings in various communities throughout Yukon and the N.W.T. The Commission made a formal presentation to the Sub-committee at the hearings held on September 21, 1981 in Yellowknife and on the following day in Whitehorse. The Sub-committee had not reported to Parliament by the end of the fiscal year.

Total electrical generation during fiscal year 1981-82 was estimated to be 2 832 904 800 MJ. Of this, 1 770 026 400 MJ was produced by hydro generators and 1 062 878 400 MJ by diesel-powered generators. Power generated increased by 69 703 200 MJ (2.5%) over 1980-81 levels. Electrical sales in the Yukon Territory were approximately 1 194 120 000 MJ, an increase of 0.9% over the previous fiscal year. Electrical sales in the Northwest Territories totalled approximately 1 352 160 000 MJ, which was a decrease of 3.7% over 1980-81. The non-coincidental peak demand on all operations during the year was 144 960 kW, an increase of 2.4% over the non-coincidental peak demand of 141 503 kW in 1980-81.

## *Plans for 1982-83*

Projected significant operating statistics for the 1982/83 fiscal year include the following: estimated electrical generation, 3 175 250 400 MJ, estimated electrical sales, 2 867 040 000 MJ, estimated central heat sales,  $413\,010 \times 10^6$  KJ, estimated fuel consumption (diesel generation and central heating system), 119 992 809 litres, staff establishment, 348, Total Number of Communities Directly Served by the Commission, 54, Total Number of Communities Served Indirectly by the Commission (wholesale supply to local distributors) 6.

Major capital projects proposed for the 1982-83 fiscal year include the following:

Purchase of 2 Flyable 1520 kW gas turbine units	\$1 376 000
Install reactor at Yellowknife sub	75 000
Purchase Fort Smith digger truck	130 000
Increase Whitehorse fuel storage with filtration equipment	75 000
Relaying protection AVR (carryover) at Taltson	60 000
Modify & upgrade plant and cooling system for plant units (carryover) at Dawson	250 000
Install new & improved electrical services at Dawson	125 000
Construct new power line for new services at Norman Wells	100 000
Distribution extensions at Tuktoyaktuk	65 000
Distribution extensions at Rankin Inlet	75 000
Install 30 kW, remove 115 kW unit at Repulse Bay	168 000
Convert Repulse Bay to 3 phase 2400/4160 volt service	70 000
Convert underground systems at Holman Island to overhead	60 000
Purchase and install 300 kW, remove 100 kW at Hall Beach	300 000
Faro distribution extensions	100 000

# Northern Pipeline Agency

## **Responsibilities**

The Northern Pipeline Agency was established in April 1978, with the proclamation of the Northern Pipeline Act. The Agency oversees the legislation's two objectives: first, regulating the 3 240km Canadian segment of the Alaska Highway gas pipeline to ensure maximum economic, industrial and energy benefits for Canada, while keeping adverse social and environmental impacts to a minimum and, second, facilitating the planning and construction of the project.

The pipeline will carry natural gas from Alaska along a route that closely follows the Alaska Highway through Yukon and northeastern British Columbia before entering central Alberta. At Caroline, Alberta, the line branches into two legs—one through southeastern British Columbia, and the other through southwestern Saskatchewan into the United States. A future pipeline lateral along the route of the Dempster Highway, joining the main pipeline at Whitehorse, Yukon, would give Canada access to established reserves in the Mackenzie Delta and any new reserves that might be found in the Beaufort Sea.

## **Review 1981-82**

As indicated in last year's report, Foothills Pipe Lines (Yukon) Ltd. undertook the construction of a \$15 million field test program at Quill Creek, Yukon. Its purpose was to demonstrate the feasibility of constructing and operating a pipeline in areas of discontinuous permafrost. While the primary construction work was completed in March 1981, a second phase of the project was started in September to evaluate construction procedures during the period of maximum thaw depth. In this phase of the test program, four sections of pipe were installed in the embankment or above-ground mode, with varying degrees of insulation.

The construction and operation of the test facility were under the authority of a land-use permit issued by the Northern Pipeline Agency. The permit required the Company to comply with extensive technical, environmental and socio-economic conditions. The Agency has kept the site under surveillance and has inspected it regularly.

The facilities at the Quill Creek test site are instrumented and will be monitored with scientific equipment. The data collected will be used in planning the design and construction for the mainline.

In its interim report to the Minister of the Environment in September 1979, the Environmental Assessment and Review Panel (EARP) listed a series of deficiencies with respect to the Environmental Impact Statement prepared previously by Foothills. In early 1981, Foothills submitted to the EARP Panel the first addendum to the Environmental Impact Statement, which addressed routing alternatives in the Whitehorse-Ibex Pass Region.

The EARP Panel held public hearings in June 1981 on Foothills' proposed routing of the pipeline in this area north of Whitehorse. In its report to the Minister of the Environment on the subject, EARP recommended that the Whitehorse West alternative route be used rather than the Company's preferred alignment through the Ibex Valley. The Panel concluded that the pipeline could be constructed through the Ibex without undue adverse impact on the environment. However, the panel was concerned about the easier access to the area that might be provided by routing the line through the valley. The report has been forwarded to the Minister responsible for the Northern Pipeline Agency for consideration in determining the final route.

Throughout the year, the Company's geotechnical drilling programs continued to test soil conditions along the proposed route and at various compressor stations and work camps.

From April to June 1981, Foothills toured Yukon communities along the route to provide information on operations and maintenance, employment, training programs, and construction employment. Residents who were looking for employment on the project completed detailed questionnaires and application forms. From these applications, 21 people were chosen for training in operations and maintenance skills, and a list of those interested in construction employment was started. The list will be updated regularly with new applicants, and will serve as an "inventory" of Yukon residents, permanent Yukon residents and Mackenzie District residents who are interested in pipeline jobs.

Throughout the year, senior Agency officials continued to consult with the Government of the Yukon and the Yukon Advisory Council. One of the quarterly Federal-Provincial-Territorial Consultative Council meetings was held in Yukon. Yukon Government and Agency representatives also attended the other Consultative Council meetings held in the western provinces through which the pipeline passes.

The Honourable H.A. (Bud) Olson, Minister of State for Economic Development and Minister responsible for the Northern Pipeline Agency, visited Whitehorse in May when he met with the Yukon Government, the Chamber of Commerce and the Chairman of the Yukon Advisory Council.

The Agency helped to arrange for the Special Committee of the Senate on the Northern Pipeline to tour through Yukon, Alaska and the Northwest Territories in June. This trip was organized to enable the Committee to gain a first-hand understanding of the implications of resource development for northern Canada.

During the fiscal year, Foothills prepared draft socio-economic and environmental plans, which the Agency reviewed. In February 1982, Foothills held consultations with communities along the pipeline route on the various plans relating to the project.

The Agency has also reviewed the Company's proposals for the pipeline's route and the location of related facilities to identify potential socio-economic, environmental or technical conflicts.

#### **Plans for 1982-83**

It is expected that the socio-economic and environmental terms and conditions for the Yukon segment of the Alaska Highway Gas Pipeline Project will be promulgated by the Governor-in-Council. Consideration of the terms and conditions was deferred pending a review of the possible implications of the mobility rights contained in the proposed Canadian Charter of Rights and Freedoms.

The proposed Yukon terms and conditions require hiring preference to be given to Yukon and Mackenzie District residents.

Following approval of the terms and conditions, Foothills will complete the project's socio-economic and environmental plans for review and approval by the Agency. All plans must be approved before mainline construction begins.

Final submissions to the EARP Panel are scheduled to be completed by the Company. The review process is expected to be concluded following further public hearings by the Panel in the summer of 1982.

The Agency will continue to work with other federal departments, the Yukon Government, and Foothills to complete the selection of the right-of-way and related facilities for the pipeline project in Yukon.

The Crown easement agreement is expected to be finalized this year in preparation for right-of-way approval.

#### **Summary of Direct Northern Expenditures (000's)**

	\$	%
<i>Total Forecast 1981/82</i>	459	100.0
<i>Expenditure by Northern Objective:</i>		
Quality of Life	156	34.0
Protection of the Environment	152	33.1
Economic Growth	151	32.9

# Northern Transportation Company Limited

## **Responsibilities**

Northern Transportation Company Limited company was incorporated federally in 1947 and has continued its operations under the Canada Business Corporation Act since 1977. The Company is a profit-oriented commercial Crown corporation whose primary objective is to provide economic, reliable and comprehensive transportation and related services in Northern Canada and the Arctic.

Northern Transportation has provided marine transportation services throughout the Mackenzie River Watershed since 1934, and along the Western Arctic Coast and islands since 1957. Keewatin operations out of Churchill, Manitoba were inaugurated in 1975. Since then the Company has been providing re-supply services to five communities along the west coast of Hudson Bay and Coral Harbour on Southampton Island.

## **Review - 1981**

The Company transported 348 000 tonnes of cargo in 1981, an increase of 14 per cent over the previous year. Community re-supply accounted for slightly more than half of the total tonnage.

Marine operations were again seriously hampered by low water conditions throughout the Mackenzie River Watershed, particularly during the latter part of the season. Considerable hull damage was sustained and the decreased carrying capacity of the fleet necessitated the deployment of additional marine equipment. As a result, operating expenses were higher than normal for the volume of traffic handled. In addition, a number of tugs and barges had to be wintered in Inuvik and Tuktoyaktuk because it eventually became impossible to pass through the limestone ridge that straddles the Mackenzie River at the "Ramparts".

Despite the difficult operating conditions, the Mackenzie and Arctic sectors produced a 20 per cent increase in tonnage over last year. Slightly over 273 000 tonnes of cargo was delivered to points along the River, isolated communities and defence installations in the Western Arctic, and to exploration staging sites in the Beaufort Sea. The volume of community re-supply cargo remained relatively stable and the increase in these sectors therefore is attributable to the oil and gas exploration industry. Traffic bound for Alaska in 1981, consisting of tubular products as well as a large drilling rig, was more than double that of the previous season. In the Canadian sector of the Beaufort Sea, exploration cargo increased by 23 000 tonnes.

Some difficult operating problems occurred in the Athabasca sector at the end of the season. Low water conditions and a sudden cold spell in early October brought navigation to an abrupt halt, with marine equipment becoming frozen-in at various locations along the Athabasca River. Later, a break in the weather enabled the Company to reactivate two vessels to deliver some urgently required fuel to Camsell Portage, a small community on the north shore of Lake Athabasca. The weather also enabled four stranded barges to be moved to a point where dry cargo could be retrieved by bush road. As well, barges at Fort McMurray were offloaded and the cargo was returned to shippers or stored for delivery next season.

Traffic levels in the Keewatin declined for the third consecutive year. The 11 per cent decrease in 1981 was attributable mainly to a consolidation of bulk fuel inventories.

Operationally, the Keewatin sector was relatively problem-free. Weather conditions were exceptionally favourable. As a result, all cargo was moved in record time.

## **Outlook - 1982**

Within the past year, exploration activity in the Beaufort Sea has increased significantly and tonnage estimates prepared by the oil companies for the next decade show a further substantial increase. The magnitude of the increase in traffic demand will depend, of course, on the extent to which the industry carries through with its currently envisaged programs. Approval of the Norman Wells pipeline will also generate additional traffic during the construction phase.

There is no doubt that the recently announced decision to close the Eldorado mine at Uranium City will significantly affect the Company's operations in the Athabasca sector. Last year, approximately 70 per cent of traffic originating in Fort McMurray was destined for Uranium City. In addition, completion of the bridge across the Athabasca River at Fort MacKay, Alberta will have the effect of further reducing traffic in this area.

Tonnages to the Keewatin communities appear to have stabilized and longer-term growth in this sector will depend largely on developments in the mining industry, particularly in the Baker Lake area.

# Public Service Commission of Canada

An evaluation of the impact of the "Staffing in the North" policy, conducted by the Public Service Commission in 1981, indicates that it has enjoyed a measure of success. Since the policy's implementation in June 1980, most administrative and technical positions below the senior management levels have been filled by qualified northern residents. In the Scientific and Professional category, particularly health care and engineering, the shortage of qualified northerners has necessitated staffing south of 60°. Although the policy has not directly affected the employment of indigenous people to any great extent, it has, from the PSC's perspective, encouraged some departments to consider the Northern Careers Program (NCP).

Established in 1974, the NCP is operated by the PSC for the federal departments in the N.W.T. and the Yukon. The Program provides an opportunity for participants recruited from the northern indigenous population to acquire skills that will prepare them to compete for permanent positions within the Public Service. With individually designed career plans, the participants receive on-the-job and formal training for up to two years.

As of December 1981, 275 Indians, Inuit and Métis had been recruited. Of these, 104 had completed full career plans and had "graduated"; 45 had transferred to positions equal to, or higher than the positions they held at entry; 60 participants had withdrawn from the program and 66 were currently undergoing training. Many of the participants who withdrew found new and better employment with other levels of government in the North.

In 1981, the Treasury Board recommended a review of the Northern Careers Program. An evaluation steering committee carried out the review. The committee included, among others, representatives of the northern indigenous associations and the Inuit Tapirisat of Canada. The recommendations of the committee are as follows: (i) The Program should continue and be co-ordinated by the Joint Council – a body consisting of representatives of the Treasury Board, the PSC and the five national indigenous associations; (ii) The PSC should have budgetary as well as administrative responsibility for the Program rather than share it with Indian and Northern Affairs; (iii) The scope of the Program should be expanded to 150 person years over a period of two to three years, and an Eastern Arctic regional office should be established.

While the Treasury Board and PSC are still reviewing some of the recommendations, others have already been acted upon. For example, the NCP has been transferred to the Staffing Branch of the Commission. The NCP now forms part of the PSC's Indigenous Participation Programs unit, which also includes the Office of Native Employment (ONE).

Through the PSC district offices in Yellowknife and Whitehorse, the Office of Native Employment continued to promote employment opportunities for indigenous people interested in careers with federal departments and agencies in the North. The ONE also provided support and advisory services to the Joint Council and was a member of the Council's Work Group.

## **Responsibilities**

The Public Service Commission of Canada (PSC) administers the Public Service Employment Act, which provides for equality of access to the Public Service for all Canadians. The PSC develops and administers standards for selecting candidates for the Public Service. The P.S.C. provides appeal mechanisms for appointments that are challenged and audits and manner in which individual departments carry out their staffing activities. The PSC also conducts and advises on training programs for public servants.

In the North, the federal government departments that operate there and the Public Service Commission share the responsibility for policies relating to employment in the Public Service.

## **Review 1981-82**

The Staffing Branch of the PSC, which has been fully operational in the Northwest Territories and the Yukon for over three years, continued to provide a full range of staffing services to the federal departments and agencies north of 60°.

The district staffing offices in Whitehorse and Yellowknife maintained ongoing employment information and counselling services for northern residents. These offices also provided advice and assistance on personnel matters to federal managers.

In 1981-82, special efforts were made to implement the PSC's "Staffing in the North" policy. This policy is intended to encourage federal departments to recruit and develop northern residents including indigenous people, to fill positions in the North whenever possible.

### ***Plans for 1982-83***

Particular emphasis will continue to be placed on exposing northern residents to federal employment opportunities and on promoting employment of more northern people.

The district staffing offices will continue to provide a full range of recruitment, referral and staffing services.

The Office of Native Employment will continue its work to increase employment opportunities for indigenous people in federal departments and agencies in the North.

The Northern Careers Program will continue to ensure broad participation by departments, agencies and indigenous associations and will recruit northern indigenous people for training positions.

### **Summary of Direct Northern Expenditures (000's)**

	\$	%
<i>Total Forecast 1981/82</i>	2 266	100.0
<i>Expenditure by Northern Objective:</i>		
Quality of Life	2 266	100.0

# Public Works Canada

## **Responsibilities**

Public Works Canada (PWC) is the largest construction and real property management organization in Canada providing services to other Government departments and agencies. PWC provides a wide variety of architectural, engineering and construction services. It assists in planning and design work, investigating possible building sites and carrying out feasibility studies. The Department is also responsible for constructing and managing buildings, public utilities, highways, harbours and wharves. It also acquires and disposes of land and properties. In addition, PWC leases premises for the Government of Canada and supervises the renovation, maintenance and management of government buildings.

In the North, the Department is involved in housing and transportation. It provides accommodation for federal government employees and designs, constructs and maintains the ever-expanding highways system in the Yukon and the Northwest Territories. PWC also keeps water transportation routes navigable in the North through its dredging activities.

## **Western Region**

### **Review 1981-1982**

Highway construction on behalf of the Department of Indian Affairs and Northern Development continued this year on the Liard Highway only. This highway, which will link the Mackenzie and Alaska Highways, is now 80 per cent complete. Total construction costs for this year were \$10 470 000.

Maintenance dredging on the Mackenzie River Waterway was carried out at a cost of \$1 013 000.

A \$1 229 000 contract was awarded to build the final phase of the Frobisher Bay housing project.

Construction was completed on the Holman Island Nursing Station and Residence, on behalf of Health and Welfare Canada, at a cost of \$984 345.

The sum of \$125 000 was spent to alter the roof of the Gjoa Haven nursing station.

A maintenance survey to locate mechanical and electrical deficiencies was undertaken in all northern nursing stations in the Mackenzie and Inuvik zones.

An addition to the Core Library in Yellowknife was built on behalf of Indian Affairs and Northern Development at a cost of \$412 874.

The insulation and vapour barriers were improved in Crown housing in Fort Smith and Fort Simpson, at costs of \$200 000 and \$50 000 respectively.

Two new RCMP Detachment buildings costing \$290 000 and \$310 000 were completed in Tuktoyaktuk and Coppermine respectively. An amount of \$135 000 was spent to relocate the Hay River Detachment building in Pine Point.

New RCMP married quarters were built in Tuktoyaktuk at a cost of \$325 000. A \$135 000 married quarters building in Fort Franklin is nearing completion.

An \$80 000 contract was completed for renovating the front entrance to the RCMP Subdivision Building in Yellowknife.

An energy retrofit of two RCMP duplexes in Fort Smith was completed at a cost of \$160 000.



Bailey Bridge at Km 138.25 Nelta River on the Liard Highway.

### **Plans for 1982-83**

Construction will continue on the Liard Highway, and the road is expected to be open to traffic in November 1982. Crushed gravel surfacing must be completed over approximately 150 kilometres before the highway is turned over to the Government of the Northwest Territories.

The plans and specifications for continuing the Mackenzie Highway to Norman Wells are expected to be finalized by the end of this year. The last construction was undertaken in 1977 near Wrigley.

A small test embankment will be constructed near Inuvik on the proposed Inuvik-Tuktoyaktuk Highway, in order to test the suitability of relatively high ice content fine grained material for road construction.

Maintenance dredging will continue on the Mackenzie River Waterway and a study will be undertaken to assess requirements for dredging at Ramparts Rapids.

Insulation upgrading projects for Hay River, Inuvik, and Pine Point are planned at estimated costs of \$200 000, \$100 000 and \$45 000 respectively.

A new \$1 150 000 Nurse's Residence and a new design for the Nursing Station are planned for Aklavik. A study will be conducted on Inuvik Hospital to define project requirements.

RCMP projects planned for 1982-1983 will include replacing the door of its aircraft hangar at Inuvik at an estimated cost of \$105 000, building a new warehouse in Yellowknife at an estimated cost of \$40 000, and constructing new houses in Aklavik and Tuktoyaktuk at estimated costs at \$145 000 and \$170 000 respectively.

### **Pacific Region**

#### **Review 1981-1982**

Routine maintenance of the Northwest Highway System in Yukon continued under the agreement with the Government of Yukon. A total of 170 km of B.S.T. (bituminous surface treatment — i.e., emulsified asphalt with crushed aggregate blotter) was applied.

Public Works Canada's \$10 600 000 capital program on the Northwest Highway System was carried out in the Yukon and included the following projects, which were completed during this year, or are nearing completion:

- |  |                |
|--|----------------|
| (a) Complete grade construction<br>Km 1365 to Km 1390            | 100% completed |
| (b) Sub-grade and base course construction<br>Km 1251 to Km 1265 | 100% completed |
| (c) Sub-grade and base course construction<br>Km 1346 to Km 1365 | 80% completed  |

Work amounting to \$12 850 000 was carried out on Shakwak project (joint U.S. — Canada project funded by the U.S. for upgrading the Haines Road and the Alaska Highway northwest of Haines Junction, Yukon), for the following major projects:

- |  |                |
|--|----------------|
| (a) Sub-grade construction<br>Km 70.2 to Km 79.9 Haines Road, B.C.   | 80% completed  |
| (b) Sub-grade construction<br>Km 79.9 to Km 88.5 Haines Road, B.C.   | 100% completed |
| (c) Surface treatment (B.S.T.)<br>Km 207.8 to Km 230.4 Haines Road, Y.T.                                       | 100% completed |
| (d) Construction 5 Mile Creek Bridge<br>Km 77 Haines Road, B.C.  | 100% completed |
| (e) Construction of Dezadeash River overflow structures and approaches<br>Km 254 to Km 254.7 Haines Road, Y.T. | 100% completed |
| (f) Construction and surfacing through Haines Junction Townsite, Y.T.  |                |

#### **Plans for 1982-1983**

Routine maintenance of the Northwest Highway System in Yukon will continue under the agreement with the Government of Yukon. B.S.T. will be applied on approximately 215 kms of the System.

The Public Works Canada Capital Program on the Northwest Highway System in Yukon will amount to \$7 100 000 and will include the following major projects:

- |   |
|---|
| (a) Complete grade construction<br>Km 1265 to Km 1273 |
| (b) Complete grade construction<br>Km 1293 to Km 1308 |

The Public Works Canada Program for Bridges on the Northwest Highway System will be \$2 600 000, and will include the following major projects:

- |   |
|---|
| (a) Construction of Seagull Creek Culvert and approaches at<br>Km 1180.2          |
| (b) Construction of the Screw Creek Culvert and approaches at<br>Km 1194.2 (B.C.) |

Work on the Shakwak Project in the amount of \$4 100 000 will be carried out and will include the following major projects:

- a) Completion of sub-grade Km 70.2 to Km 79.9 Haines Road, B.C.
- b) Base course and asphalt pavement Km 70.0 to Km 88.5 Haines Road, B.C. Shakwak windup — only minor projects will be carried out in future years if no funds are forthcoming from the United States Government.

Projects sponsored by the Department of Indian Affairs and Northern Development will include:

- a) Completion in October of the Pacific Region Public Works engineering Liard Highway project in the Northwest Territories.
- b) Pre-engineering survey and design work on the North Canol Road.
- c) Construction of Lower Blackstone River Bridge on the Dempster Highway.

**Summary of Direct Northern Expenditures (000's)**

	\$	%
<i>Total Forecast 1981/82</i>	29 823	100.0
<i>Expenditure by Northern Objective:</i>		
Administration and Support	12 591	42.2
Economic Growth	10 131	34.0
Quality of Life	4 220	14.1
Evolution of Government	1 475	5.0
Leisure and Recreation	1 406	4.7



Styrofoam insulation to prevent frost heaving, km 217 Haines Road - Shakwak Project

# Regional Economic Expansion/ Industry Trade & Commerce

## **Responsibilities**

DREE plans and co-ordinates programs designed to overcome regional economic disparities in Canada. In co-operation with the Territorial Governments, the Department of Indian Affairs and Northern Development and other federal agencies, DREE participates in the joint planning and implementation of regional socio-economic programs for those northern areas requiring development assistance.

## **Northwest Territories**

### **Review 1981-82**

Under the General Development Agreement signed by DREE, DIAND and the Government of the Northwest Territories, the Interim Subsidiary Agreement on Community Economic Development was into its final stage of implementation. The Subsidiary Agreement, originally scheduled to expire on March 31, 1981, was extended to provide program continuity to September 30, 1981. The Agreement provides for carrying out priority projects in tourism, the harvesting of renewable resources, job rotation and community planning. It also covers the planning of any longer-term initiatives that may occur in the future. In the 1981-82 year, projects totalling \$3.3 million were approved under the Agreement.

Activity under the Special Rural Development Agreement (Special ARDA), signed in 1977, indicates a high level of acceptance of the program by native people of the Northwest Territories. The program provides financial support and technical assistance, particularly to people of Indian or Inuit ancestry, to create jobs and improve socio-economic conditions. Since the program's inception, 273 of the applications for funding have been approved and have involved a commitment of approximately \$9.7 million.

The Regional Development Incentives Program (RDIA) provides incentive contributions and loan guarantees to business and industry willing to establish, expand or modernize manufacturing or processing facilities. It is expected that a departmental commitment of \$270 000 under the Program will provide 51 new jobs in the Territory.

### **Plans for 1982-83**

Current agreements and programs are continuing, and increased activities under the Special ARDA and RDIA are expected.

## **Yukon**

### **Review 1981-82**

In 1977, a General Development Agreement (GDA) was signed between Canada and Yukon. The Agreement established a framework for joint federal-territorial co-operation in planning and implementing programs for economic and social development. Within this framework, two subsidiary agreements are currently providing assistance for Renewable Resource Development and Tourism Development.

The Renewable Resource Development Agreement provides for \$6.6 million, including more than \$3.1 million from the Department of Regional Economic Expansion (DREE). The money will be spent on programs to expand the resource information base and to upgrade such recreational facilities as territorial parks, campgrounds and historic sites in Yukon. Environmental land surveys have been completed for the Southern Lakes and MacMillan Pass areas of the Territory, and work on mapping and reporting is underway. In addition, several smaller resource inventory/planning studies are in progress. Work has also been completed on ten campgrounds and a renewable resource workshop and training complex. Conservation facilities have been upgraded in five Yukon communities. Some of this work and other community development projects were carried out by the Resource Development Corps, which provides training and work experience for Yukon residents.

Under the Tourism Development Agreement, which was extended to continue programming for an additional year, \$6 million, including \$3.6 million from DREE, is provided to assist the further development of this industry in the Yukon. Projects to improve downtown Dawson City have been progressing well, and incentives have been offered to the private sector to increase accommodation for tourists and to build appropriate facades for buildings in the historic zone of the town. In Whitehorse, a ski chalet was completed, which enabled the city to host the 1981 World Cup and North American Championships for cross-country skiing. It is expected that this \$1.5 million facility will contribute to lengthening the tourist season and that it will be used to accommodate business conventions. Work has also started on Visitor Information Centres at Dawson City, Whitehorse and Watson Lake.

The Special Rural Development Agreement (Special ARDA) provides financial support and technical assistance to rural people, particularly those of Indian ancestry, for development of employment opportunities and improvement of socio-economic conditions in the Territory. From the inception of the program in June 1978, 224 applications have been received, which have resulted in 93 accepted offers to commercial, primary producing and social adjustment projects. DREE has committed \$3.4 million to this program to date which is expected to result in 225 jobs.

Incentive grants are also provided to qualifying enterprises under the Regional Development Incentives Act (RDIA), to establish, expand or modernize manufacturing or processing facilities in Yukon. Since June 1978, a total of \$1.9 million has been offered to six projects expected to create 53 jobs.

#### ***Plans for 1982-83***

Current agreements and programs are continuing and increased activities under the Special ARDA and RDIA are expected. Planning and negotiations are underway with the Yukon Territorial Government and other federal agencies to develop a more comprehensive approach to economic development. This approach will emphasize providing assistance to business and developing human resources.

#### **Summary of Direct Northern Expenditures (000's)**

	\$	%
<i>Total Forecast 1981/82</i>	8 445	100.0
<i>Expenditure by Northern Objective:</i>		
Economic Growth	8 445	100.0

# Revenue Canada

## *Review of 1981-82*

### *Yukon - Customs Activities*

The Port of Whitehorse and the offices reporting to it administer and enforce Customs laws and regulations throughout Yukon. The Territory is serviced by all modern transportation methods used to move goods and passengers into and out of Canada.

To accommodate this traffic, Customs Offices are maintained at Beaver Creek, Pleasant Camp, Dawson and Whitehorse and, during the summer months, at Little Gold Creek and Fraser. These offices provide service at six locations approved as Customs airports of entry, and at the highway sufferance warehouse at Whitehorse. The R.C.M.P. carry out Customs formalities at Old Crow on behalf of the Department. Since 1978, special arrangements have been made to accommodate river traffic leaving and re-entering Canada by the Yukon-Porcupine River route.

### *Yukon - Excise Activities*

Excise carries out its responsibilities in the Yukon by having Excise auditors visit licensed businesses periodically in such communities as Whitehorse, Teslin, Dawson City, Watson Lake and Faro. (There are 37 Excise licences in the Territory.) In 1981-82, the Excise auditors visited businesses in these locations to conduct audits, provide tax information and, as required, assist in the processing of refund claims.

### *Northwest Territories - Customs Activities*

In view of the increased activities in the eastern Arctic, the Department established Frobisher Bay as an outpost staffed full time by Customs personnel. The Frobisher Bay office is under the purview of the Port of Ottawa.

During 1981-82 exploration activities, both commercial (the development of oil and mineral resources) and non-commercial (geographical, scientific and mountaineering expeditions) continued to expand. These activities meant increased cargo deliveries, which required closer surveillance and monitoring by Customs.

The volume of imported and exported cargo increased markedly from the previous fiscal year. Most shipping activity involved delivering oil exploration and mining supplies and petroleum products to numerous locations in the Territories, particularly the mining community of Nanisivik. Special arrangements continue to accommodate offshore drilling activities in the Beaufort Sea and the Baffin Island area.

## **Customs and Excise**

### ***Responsibilities***

Customs controls the international movement of goods, persons and "conveyances" (vehicles, airplanes, ships, etc.) and collects duties and taxes due on imports

Excise administers the provisions of the Excise Tax Act, the Excise Act, the Importation of Intoxicating Liquors Act and related regulations. The Branch issues licences, provides tax information and audits the records of businesses subject to payment of federal sales and excise taxes.

*Northwest Territories - Excise Activities*

Despite increased business activity in the Northwest Territories, the headquarters of business firms having Excise licences are located mainly outside the N.W.T. However, the Branch does have 11 licensees in the N.W.T. and in 1981-82 Excise personnel visited Yellowknife, Hay River and Fort Smith to carry out audits, process refund claims, provide tax information and inspect the operation of a bonding warehouse.

*Plans for 1982-83*

The Department has decided to carry out detailed studies of the problems related to administering Customs and Excise programs in the North. These studies are necessary because of the increase in commercial activities in the Territories and the Arctic Archipelago. The studies will concentrate on determining how the Department will continue to provide Customs service to remote areas, and on its long-term policies and strategies for maintaining Customs control of offshore oil and gas industries located in the North.

The following lists show those Departments, other than Customs and Excise, that carry out Customs' duties at specified locations:

*Royal Canadian Mounted Police*

Baker Lake	Pangnirtung
Cambridge Bay	Pond Inlet
Clyde River	Resolute Bay
Coppermine	Sachs Harbour
Eskimo Point	Spence Bay
Grise Fiord	Tuktoyaktuk
Lake Harbour	Yellowknife
Nanisivik	

*Department of National Defence*

Cape Dyer  
Cape Parry  
Hall Beach

*Department of Environment*

Eureka  
Mould Bay

**Summary of Direct Northern  
Expenditures (000's)**

	\$	%
<i>Total Forecast 1981/82</i>	716	100.0
<i>Expenditure by Northern Objective:</i>		
Sovereignty and Security	716	100.0

# Royal Canadian Mounted Police

## "M" Division

### Yukon

#### **Responsibilities**

The Royal Canadian Mounted Police (R.C.M.P.) in "M" Division (Yukon Territory) provide all policing services to the Yukon Territory. Under contract to the Territorial Government, the R.C.M.P. enforce the provisions of the Criminal Code and the Territorial Ordinances. Through contract and non-contract personnel, the R.C.M.P. also fulfil a federal role, being responsible for enforcing various federal statutes and regulations.

Currently, the Force has 115 regular members in the Yukon (including 15 Special Constables), 8 civilian members and 17 public servants. Detachments are located at Old Crow, Dawson, Mayo, Beaver Creek, Carmacks, Whitehorse, Carcross, Teslin, Watson Lake, Faro, Ross River and Haines Junction. Sub-detachments are located at Destruction Bay and Pelly Crossing. The Divisional Headquarters of "M" Division is in Dawson City.

#### **Review 1981-82**

The number of non-traffic Criminal Offences committed in the Yukon increased 19 per cent over the previous year, while federal offences increased by 28 per cent.

Criminal Code traffic offences decreased 9 per cent in 1981, while territorial traffic offences increased by 9 per cent. The total number of reportable traffic accidents increased by 272, from 1 234 to 1 506. There were 20 traffic fatalities in 1981.

The Native Policing Program, sponsored by the Department of Indian and Northern Affairs, has again successfully trained native people to take up positions as native special recruits and clerk/stenographers, both inside and outside the Force.

During the summer of 1981, the Summer Students Employment Program hired four university students as "Supernumerary Special Constables." The Division will continue with the Program in 1982.

In August 1981, 12 R.C.M.P. Members took part in the Dempster Highway Run for the Disabled, a relay-run from Inuvik, N.W.T. to Dawson City, Yukon. The R.C.M.P. and the Lions Club jointly sponsored this project to raise funds for the disabled. The run covered a distance of about 770 km along the Dempster Highway. Through this project, the three Whitehorse area Lions Clubs realized about \$40 000 for the Yukon Special Olympic Committee. Part of the money was used to buy a van equipped with a wheelchair-lift.

Various other projects related to crime prevention and police-community relations continued to receive high priority within "M" Division.

The R.C.M.P. Training Program was increased over the past year to include such courses as "Small Boat Operators", "Effective Presentations", and "First Aid". Several other courses were offered, a number of which included trainees from other government departments. Of particular interest was the Cross Cultural Training Course for which there is a great demand. The Course's training philosophy is "Train to Needs".

During the year, new R.C.M.P. Detachment offices were constructed and occupied at Dawson City and Watson Lake. In addition, a new 3-bedroom married quarters unit was built at Haines Junction. Major renovations to the Old Crow Detachment/Quarters building were also carried out. The new quarters now accommodate two married members and their families.

**Plans for 1982-83**

A new Detachment Building will be constructed at Haines Junction, and considerable renovations to the existing Teslin Detachment Building will be undertaken. Provided that funds remain available, other renovations and construction will be carried out to meet projected requirements.

**"G" Division**

*Northwest Territories*

**Responsibilities**

The Royal Canadian Mounted Police "G" Division provides policing services to the Northwest Territories under contract to the Territorial Government. These services, with headquarters in Yellowknife, encompass both Federal and Territorial police responsibilities. There are three sub-divisions and 38 detachments. Three air detachments at Yellowknife, Inuvik and Frobisher Bay, supply air support services.

**Review 1981-82**

Although the Northwest Territories continue to have the highest crime rate per capita, overall crime has remained stable during this period. Crimes against persons were down slightly, but crimes against property increased 12 per cent. Most of the serious crimes occurring in the Northwest Territories are related to alcohol abuse.

The Regular Patrol Service (R.P.S.) to settlements that do not have permanent detachments is working well. There are 63 settlements in the N.W.T., of which 25 are served by the R.P.S. Twelve of these have police patrol cabin facilities.

Efforts continued in 1981-82 to recruit native people to serve on the Force. As of the end of 1981, there were three vacancies for Special Constables in the central and eastern Arctic.

The Option 3(b) (Special Constable) Program is continuing, with the involvement of our Native Policing Co-ordinator. During 1981-82, three applicants were accepted and posted to Sanikiluaq, Igloodik and Fort Simpson.

**Plans for 1982-83**

Fiscal restraint has limited new construction in 1982-83 to one patrol cabin at Nahanni Butte.

Plans are underway for 1983-84 to provide married quarters for the Option 3(b) Program at Fort Rae, Fort Providence, Fort McPherson, Aklavik and Tuktoyaktuk.

Summary of Direct Northern Expenditures (000's)	\$	%
Total Forecast 1981/82	26 845	100.0
Expenditure by Northern Objective:		
Quality of Life	13 422	50.0
Sovereignty and Security	13 423	50.0

# Department of the Secretary of State

## Citizenship Program

### *Responsibilities*

The Department's offices in the Yukon and Northwest Territories receive requests from voluntary associations for technical advice on, and assistance and grants for, certain community activities. For instance, the Department encourages native groups to participate fully in the North's changing society, while preserving their own cultural heritage. It is also concerned with preserving both the rights of official language minority groups, and their cultural identity within their communities.

### *Review 1981-82*

Program services for the Northwest Territories were administered through an office in Yellowknife (reporting to the Alberta Regional Office effective April 1, 1982).

The Native Citizens' Directorate provided technical and financial support to native associations, women's groups, friendship centres, social and cultural development projects and communications societies. It also assisted in bringing film and slide productions to remote communities.

The Multiculturalism Directorate supported an increasing number of projects. These related to such areas as writing and publications, language teaching aids for Inuit and Indian groups, Canadian Ethnic Studies in Native affairs and Inuit music, and performing and visual art productions.

A new office was also opened in Whitehorse on June 18, 1981, reporting through the Pacific Regional Office in Vancouver. During the year, the office was active with native, ethnocultural, francophone and women's groups and other community organizations.

The Official Language Minority Groups Directorate in the Yukon was involved in the development of a Franco-Yukon citizens group. A chapter conference of Canadian Parents for French was supported. The Quebec Regional officer continued to work closely with native groups in northern Quebec.

### *Plans for 1982-83*

The Department will continue to offer financial, technical and professional services to community groups in Northern communities. Such groups include native groups, official language minority groups, ethno-cultural groups, women's groups and other groups that are pursuing objectives consistent with departmental objectives and priorities.

In addition, the Department will continue to encourage youth exchanges through its Open House Canada Program.

The Official Language Minority Groups Directorate will be providing technical and financial assistance to the Association culturelle franco-ténoise, located at Yellowknife, N.W.T. to support the social and cultural development of the French-speaking community in that area. In addition, the Department intends to provide support to the Canadian Parents for French, Yukon and Yellowknife Chapters.

## Official Languages in Education

### *Responsibilities*

The programs provide assistance to provinces and Territories to develop and maintain minority official language education and second official language instruction.

The programs also help provincial, territorial and municipal administrations to serve the public in both official languages.

### *Review 1981-82*

At the request of the two Territorial Governments, the program continued to provide financial assistance to the official languages programs of each Department of Education. The total allocation was \$269 000.

Funding by the program will enable the N.W.T. to hire a French language co-ordinator. It will also be able to award study fellowships to post-secondary students, pay for full-time monitors to assist French language teachers, provide text books and other resources for teaching French and provide in-service training and bursaries for French language teachers.

In the Yukon, federal assistance for French language programs helped to provide French immersion classes in Whitehorse, the salary for a full-time co-ordinator of French courses, full-time French language monitors, bursaries for French language teacher training, support for the expansion of in-service training programs and career development programs for teachers, and bursaries for post-secondary students. The Bursaries will enable them to take summer immersion courses in an official language.

## **Fitness and Amateur Sport Program**

### ***Responsibilities***

The Fitness Canada Directorate mounts programs to raise the fitness level of Canadians by encouraging people to follow healthy lifestyles and to participate in amateur sport and recreation activities. The Sports Canada Directorate encourages amateur sports, through their governing bodies, to arrange national and international competitions. Responsibility for Fitness and Amateur Sport was transferred from the Department of Labour to the Secretary of State in September 1981.

### ***Arctic Winter Games***

Every two years, representatives of Alaska, the Yukon and Northwest Territories take part in the Arctic Winter Games, an international festival of sport and culture. These Games form a common ground for developing athletes and provide a forum for exchanging cultural and social interests among people of the North. Some 900 participants gathered in Whitehorse for the 1980 Games. The VIth Arctic Winter Games will be held in Fairbanks, Alaska in 1982.

### **Summary of Direct Northern Expenditures (000's)**

	\$	%
<i>Total Forecast 1981/82</i>	4 684	100.0
<i>Expenditure by Northern Objective:</i>		
Quality of Life	1 916	40.9
Social and Cultural Development	1 863	39.8
Evolution of Government	383	8.2
Leisure and Recreation	383	8.2
Administration and Support	139	2.9

# Statistics Canada

## *Responsibilities*

Statistics Canada is the country's central agency responsible for collecting, analyzing and disseminating data on economic and social conditions and activities in Canada. It maintains a program of consultation and liaison with the Government of the Yukon and the Northwest Territories and offers technical support for their statistical activities.

## *Review 1981-82*

The most significant event of the year was the 1981 census, Statistics Canada's largest single undertaking. Final population figures from the census were released on March 30, 1982 and showed Yukon's population at 23 153, a 6 per cent increase from 1976; the population of the Northwest Territories was 45 741, up 7.4 per cent from 1976.

Census operations were designed to take into account the special problems of carrying out a complete and accurate enumeration in the North. Although June 3, 1981 was the official Census Day for all of Canada, some parts of the Yukon and the Northwest Territories had been enumerated up to 12 weeks earlier. This early enumeration was carried out to ensure that populations migrating from winter settlements in June would be included in the count, and because climatic conditions in June can prevent enumerators from reaching some locations.

The low population density in the Yukon and the Northwest Territories made it impossible to collect data by using the "sampling method". (This method, which was used in the rest of the country, consisted of distributing a short questionnaire to four of every five residents, and a long questionnaire to the fifth.) Consequently, all households in the North, with the exception of residents of Whitehorse, Yukon, received the long questionnaire. The larger size of Whitehorse made sampling feasible in that City.

The 3.8 million square kilometres of the Yukon and the Northwest Territories were covered by a census workforce of 181 — two census commissioners and 48 enumerators were responsible for the Yukon, and six census commissioners and 125 enumerators covered the Northwest Territories.

In larger northern communities, such as Whitehorse, Yellowknife, Hay River, Fort Smith, Pine Point and Inuvik, questionnaires were delivered to households and collected later (the drop-off/pick-up method), while in other areas, enumeration was done through personal interviews.

An advertising campaign with a "Count Yourself In" theme promoted awareness of the census in a personal way. Radio commercials were aired in languages of various northern audiences. Television commercials were broadcast over the CBC Northern Broadcasting Network and the Inuit network "Inukshuk".

Data from the 1981 census provide information vital to planning local services, administering legislation and evaluating social programs for the northern population.



Census enumerator Viki Ruben makes one of her calls in Pelly Bay, a small Inuit village in the Northwest Territories.

In addition to carrying out the census, Statistics Canada continued to investigate the feasibility of establishing Consumer Price Indexes (CPI) for Whitehorse and Yellowknife. The decision was made to introduce a CPI for each city in late 1982.

A pilot test was launched in July 1981 to assess the feasibility of extending the Labour Force Survey to the Yukon. The test will continue for 12 to 15 months and will determine what labour force information will be made available on a regular basis.

Statistics Canada continued to produce cost of living indexes for northern locations so that salary allowances for federal employees posted there can be calculated. The indexes take into account the difference in retail prices and living costs between an "isolated" post and the major city that supplies its goods and services.

#### ***Plans for 1982-83***

Consumer Price Indexes for Whitehorse and Yellowknife will be introduced in the latter half of 1982. This will make it possible to measure changes over time in the purchasing power of the consumer dollar in both cities.

The pilot test to assess the feasibility of extending the Labour Force Survey to the Yukon will continue.

Information from the 1981 census will be published as data are processed and analyzed. Figures on the geographic distribution of population in the Yukon and the Northwest Territories were published June 30, 1982. Figures on selected characteristics of the territorial populations will be released on February 28, 1983.

# Transport Canada

## Arctic Transportation Directorate

### *Responsibilities*

The Arctic Transportation Directorate has been merged with the Government Relations Branch, which provides co-ordination and liaison between The Department of Transport and the provincial and Territorial Governments. This co-ordinating role not only encompasses planning and development work within the Department, but also extends to the activities of other federal departments and the Territorial Governments.

### *Review 1981-82*

During the year, the Directorate was involved in a large number of projects and issues relating to northern transportation. As the Department's representative on the federal government negotiating team, the Directorate continued to be involved in the negotiating process for comprehensive native claims. On behalf of the Canadian Coast Guard the Directorate studied alternative ways to co-ordinate the annual eastern Arctic sealift. The outcome of the study was a renewal of the Coast Guard's mandate for an additional five years.

The Directorate also contributed to studies of Mackenzie River dredging operations and on the relationship between the Department of Transport and market-oriented Crown corporations, particularly the Northern Transportation Company Limited (NTCL). The Directorate continued to represent the Department's interests in providing employee housing in isolated areas and environmental assessment and review.

The Department agreed to help organize a conference sponsored by the Canadian Transportation Research Forum on northern transportation. The Directorate provided all secretarial and other co-ordinative services to the conference organizing committee. The conference will take place in October 1982.

A Joint Air Service Planning and Evaluation Review (JASPER) study for Arctic Quebec was conducted for a joint Canada/Québec inter-agency committee.

The reports on Arctic Aviation weather requirements and passenger traffic were completed and issued as public documents.

Work continued in conjunction with the Canadian Air Transportation Administration on revising the Arctic airports policy. The 1979 program was extended to March 31, 1982.

### **Canadian Air Transportation Administration**

The Canadian Air Transportation Administration (CATA) is responsible for developing a safe, efficient national civil air transportation system that contributes to meeting government objectives. The Administration is also responsible for operating specific parts of this system. For example, CATA's northern activities include providing airports, air traffic control services and navigational aids for domestic and international air routes. The Air Administration also works with the Arctic Transportation Branch in carrying out strategic and master planning for northern air transportation. In addition, CATA budgets for and implements approved projects.

Policy formulation and national systems management are centralized at Ottawa headquarters. However operational responsibilities rest with six regional offices, three of which — Quebec, Central and Western — are concerned with CATA's northern activities.



M.V. Arctic navigating in ice.

### *Arctic Air Transportation Facilities Policy*

The Arctic Air Transportation Facilities Policy, approved in 1974, provides funding for constructing and operating airports and air navigational aids in the Yukon and Northwest Territories. It also provides funds for training locally hired airport maintenance staff and weather observer/communicators.

Under the Policy, airports are classified as Arctic A, B or C, according to a number of characteristics.

Arctic A airports are major airports that serve larger communities and have scheduled jet aircraft operations. The Department of Transport owns these airports and operates them either directly or under contract. Arctic B and C airports serve the needs of smaller communities and usually are not operated by the Department.

Of the 62 airports currently included in the Arctic Air Facilities Program, 11 are classified as Arctic A and the rest as Arctic B or C. In recent years, expenditures at Arctic A airports have, for the most part, been made to restore or replace facilities and equipment. Total capital expenditures to the end of 1981-82 were approximately \$29 million, compared with the financial ceiling approved in 1977 of \$56 million. The current approved capital expenditure level for completing the B and C airports program is \$81 million. Approximately \$53 million has been spent at some 40 sites as of March 31, 1982.

The Administration and the Arctic Transportation Directorate began a review of the Arctic Air Facilities Policy in 1979-80. Last year, a draft of the report was sent to the Territorial Commissioners, federal departments and the aviation industry for comments. The report recommends that the CATA national airports classification system be extended to the Arctic to replace the current "Arctic A, B or C" system. The report also recommends that airport facilities should be provided only to communities that are located more than three hours surface travel time from an airport with regular commercial air services, and that there should be more flexibility in determining runway lengths and other airport facilities. Three options were presented for the future:

- i) Let the Arctic Air Facilities Policy expire.
- ii) Renew the policy with changes for a further five-year period.
- iii) Develop a new policy administered and controlled by Territorial Governments.

A Cabinet discussion paper is being prepared in consultation with the Department of Indian Affairs and Northern Development. This paper should be available to ministers for their consideration in the summer of 1982.

### **Civil Aeronautics**

The Civil Aeronautics Directorate is responsible for regulating aviation activities in Canada and for providing air navigation services. The air navigation services activity includes designating air routes; inspecting and calibrating navigational aids; inspecting runways, taxiing strips and tarmacs; designing, constructing, installing, operating and maintaining telecommunications and electronic facilities; providing an air traffic control system in Canadian airspace and in that international airspace for which Canada has accepted responsibility through the International Civil Aviation Organization (ICAO); and funding meteorological services in support of aeronautics.

The regulatory activity includes developing and enforcing aeronautics legislation, standards and procedures; inspecting, examining, licensing and certifying aviation personnel, commercial operators and aircraft; inspecting aircraft manufacturing and repair; and investigating aircraft accidents and safety-related incidents.

#### *Aeronautical Licensing and Inspection Branch*

As of December 31, 1981, 458 valid licences and permits were held by persons residing in the Yukon and 515 by persons residing in the Northwest Territories.

The Transport Canada G-11 (CF-CFB) aircraft continued to carry out flight inspections throughout the Arctic and successfully completed a full year of gathering OMEGA coverage information. This information is being processed by the United States Federal Aviation Authority and will soon be available in map form.

#### *Air Traffic Services Branch*

Air Traffic Services (ATS) continued to provide control services for flights operating under Instrument Flight Rules (IFR) as well as an alerting service for aircraft known to be in difficulty and for all overdue aircraft on flight plans or flight notifications.

For air traffic control purposes, the high level airspace in Canada has been divided into three general areas: the Arctic Control Area, the Northern Control Area and the Southern Control Area. Control services were provided to all flights operating within these areas, using the Arctic Domestic High Level Airway Network. In addition, flights with sophisticated, self-contained airborne navigation systems were accommodated on great circle and minimum time, direct tracks.

In the low-level airspace, control service was provided to IFR flights operating along designated airways and within control area extensions. North of 60°, these control area extensions are provided at Fort Smith (50 nautical mile (NM) radius), Hay River (50), Norman Wells (50), Yellowknife (50), Frobisher (40), Inuvik (40), Whitehorse (40), Fort Simpson (26), Teslin (25) and Watson Lake (25). Control zones for additional protection and improved service are provided at the following airports: Fort Simpson (5 NM radius) Frobisher Bay (5), Norman Wells (5), Watson Lake (5), Inuvik (5), Hay River (10), and Fort Smith (10). Positive control zones with established Transport Canada control towers are located at Whitehorse (5 NM radius) and Yellowknife (5).

Aerodrome traffic zones provide protection for aircraft operating at uncontrolled airports. These zones of 5 NM radius are located at: Baker Lake, Cambridge Bay, Coral Harbour, Deception Bay, Eskimo Point, Eureka, Fort Resolution, Hall Beach, Grise Fiord, Nanisivik, Rankin Inlet, Resolute and Wrigley.

To provide for these activities, Air Traffic Services operates an extensive dedicated voice telephone network to locations in the North along with voice communication between Edmonton, Montréal, Moncton, Frobisher, Chimo, Resolute Bay, Gander and Reykjavik.

In addition, to assist in the movement and control of IFR traffic, the Edmonton Area Control Centre has direct controller-to-pilot communications through peripheral (PAL) remote transmitting and receiving systems at Hay River, Inuvik, Norman Wells, Whitehorse and Yellowknife. The Winnipeg Centre also has a PAL located at Churchill.

#### *Telecommunications and Electronics Branch*

The Telecommunications and Electronics Branch operates a network of Flight Service Stations (FSS) in the Northwest and the Yukon Territories. These stations are staffed by approximately 130 flight service specialists who provide aeronautical communications and related flight services to the northern aviation community.

A number of remote communications outlets (RCOs) have been established to supplement the service provided by staffed stations.

In addition, development of a network of Community Airport Radio Stations (CARS) continued. For example, Sachs Harbour, N.W.T., formerly served by an FSS, is now served by a CARS, and a similar change is proposed for Teslin, Y.T., in 1982.

The training program for observer/communicator staff assigned to the CARS has now been completed and implemented. All training is carried out by the territorial governments with certification of personnel being done by Transport Canada.

Many improvements were made to Flight Service Stations and facilities during 1981. An FSS service at Inuvik, N.W.T., was relocated to the control tower during peak periods to improve field visibility and the quality of airport advisory services available at that location. The staff at Tuktoyaktuk FSS was increased from three to four flight service specialists, permitting assignment of two specialists for peak traffic periods. Remote communications outlets (RCO) at Hall Beach and Contwoyto Lake, N.W.T., were commissioned. The latter facility, controlled by the Yellowknife FSS, operates through a combination landline/satellite connection.

More flight service improvements are scheduled in early 1982. VHF/DF service will be established at Whitehorse FSS to supplement the current limited availability from the control tower. This extension will provide 24-hour service. Construction of a new combined terminal/operations building at Baker Lake, N.W.T., began in the summer of 1982. Also, Aviation Weather Information Service (AWIS) will be established at Baker Lake and Rankin Inlet FSS during the coming year.

The reconfiguration of the Automatic DATA Information System (ADIS) circuit 947 into two circuits, 947 and 948, was completed last year, although this was not indicated in the 1980-81 GAIN report. This change has markedly improved the operational efficiency and reliability of the System affecting at least seven northern points on the network.

To provide for or improve ground-to-air communications in the North, approximately 30 VHF AM transceivers, 10 VHF AM transmitter/receiver pairs and five VHF AM multicouplers were supplied in 1981-82.

Finally, the Atmospheric Environment Service and Transport Canada have approached the CBC's Northern Service with a proposal to co-produce a weather program directed at the general public living in the Arctic. The proposal involves studying the feasibility and demands for a special weather program in the Arctic through an 18-month pilot project.

#### *Aviation Safety Bureau*

Federal government departments that send their employees to the North for either temporary or permanent duty continued to conduct regular training programs emphasizing survival for those who may become lost or involved in a forced landing or crash. The Aviation Safety Bureau advises on the content of aviation safety material in the Treasury Board's safety guidelines, with which all departments must comply.

Continued emphasis is being placed on ensuring that commercial operators are complying with Air Navigation Order Series V, No. 12, Sparsely Settled Areas Order. The Order lists survival equipment requirements for aircraft. The Bureau also holds safety promotion seminars in co-operation with groups such as the Northern Air Transportation Association (NATA). In addition, the Bureau's safety officers visit flying groups and companies in the North as part of a national program. However, on these visits, safety officers emphasize the needs of northern pilots.

#### *Airports and Construction Services Directorate*

The Airports and Construction Services Directorate is responsible for operating the national airports system. It is also responsible for the planning, design, construction and maintenance of all airport facilities, with the exception of air traffic control and related equipment.

The Directorate has responsibility for establishing national objectives, plans, priorities, policies and standards for providing airport facilities and services. It is also responsible for maintaining security at airports. Finally, the Directorate provides both advisory assistance to community airports and engineering and architectural services to CATA installations (both on and off airports) and to other sections of the Department, other federal agencies and territorial government organizations.

#### *Quebec Region*

One Arctic A airport (Frobisher Bay) and seven Arctic C airports are located in the Québec region.

The program for converting certain flight service stations to community airport radio stations staffed by observer/communicators has been completed at the seven Arctic C airports within the region.

The following provides a status report on construction at these sites during 1981-82.

### **Review 1981-82**

**Broughton Island:** The construction of a new apron (45 m x 72 m) was completed in 1981. The taxiway has also been widened to 21 m with 3 m shoulders on both sides.

The old USAF runway lighting system was replaced and a Visual Approach Slope Indicator System (VASIS) was installed. The VASIS is not operational yet; some problems have occurred with the angle of descent. The problems will be corrected during the summer of 1982.

A legal land survey has been conducted and apron floodlights have been installed.

**Cape Dorset:** The installation of a VASIS has been completed, although the system is not operational pending flight checks, which will be carried out during the summer of 1982.

**Clyde River:** A VASIS was installed in 1981 but did not become operational until lamps were delivered in the spring of 1982.

Problems were encountered with the contract for constructing the maintenance garage. These problems have delayed completion of this project to the summer of 1982.

**Frobisher Bay:** The major components of the ILS (localizer and glide path) were replaced during 1981.

**Lake Harbour:** A runway lighting system was installed during the year, although the project was not included in the original program for the airport. A legal land survey has been conducted and apron floodlights have been installed.

**Pangnirtung:** A new runway lighting system has been installed together with a VASIS. Although the lighting system is now operational, the VASIS will not be operational before the summer of 1982, pending a flight check.

**Pond Inlet:** The installation of a VASIS was completed during last summer but the system will not be operational until the lamps are delivered. Amendments to the legal land survey of last year were carried out in 1981.

**Sanikiluaq:** VASIS installation is progressing and will be completed in 1982-83.

### **Plans for 1982-83**

**Broughton Island:** An airport emergency vehicle will be provided in 1982-83.

**Cape Dorset:** An airport emergency vehicle is scheduled to be delivered in the summer of 1982. A project to relocate and replace the NDB will start in 1982-83, but will involve only the civil works as electronic equipment will not be available before 1983-84.

**Clyde River:** The installation of apron floodlights is planned for summer, 1982, as are repairs to the maintenance garage.

**Frobisher Bay:** The following items in addition to minor projects, are scheduled for the coming year: the replacement of water and septic tanks; replacement of UHF and VHF transmitters; consolidation of the HF receiver site at the VHF transmitter site; and the rehabilitation of the VHF transmitter site.

**Pangnirtung:** An airport emergency vehicle is scheduled for summer, 1982, as is the civil work for the rehabilitation of the NDB.

**Pond Inlet:** For the summer of 1982, an airport emergency vehicle will be delivered and floodlights are scheduled to be installed.

**Sanikiluaq:** A legal land survey will be carried out during 1982. Delivery of an airport emergency vehicle and the installation of apron floodlights are also scheduled. The VASIS installation should be completed by the end of the summer.

### **Central Region**

One Arctic A airport (Resolute Bay) and 14 Arctic B and C sites are located within Central region.

Community airport radio stations staffed by observer/communicators have been established at the following sites: Chesterfield Inlet, Eskimo Point, Whale Cove, Repulse Bay, Igloolik, Grise Fiord, Spence Bay, Pelly Bay and Gjoa Haven.

A status report on construction at these sites during 1981-82 follows:

### **Review of 1981-82**

**Baker Lake:** The apron expansion project was completed and the gravel base for the meteorological instruments was laid.

**Coral Harbour:** High intensity runway approach lighting and illuminated wind socks were installed. The VASIS was relocated from the east to west side of Runway 15. A field electrical centre building was constructed and an electrical regulator relocated.

**Gjoa Haven:** Construction of a new runway began during the year and is now partially completed.

**Grise Fiord:** An NDB was installed at this airport during 1981.

**Hall Beach:** A new maintenance garage was constructed at this site in 1981.

**Igloolik:** During the year, work on runway construction was completed at Igloolik.

**Rankin Inlet:** Crushed gravel was placed on the runway and work on the VHF/DF and the VOR/DME completed. The equipment was commissioned in February 1982.

**Repulse Bay:** Equipment repairs were completed with the intention of resuming runway construction in 1982. Materials for the passenger shelter were brought on site in preparation for an early construction start in the spring.

**Spence Bay:** Runway lighting and VASIS were installed and work on the passenger building started during the year.

**Whale Cove:** Runway lighting was installed.

### **Plans for 1982-83**

**Baker Lake:** Starting in 1982-83, a combined terminal/operations building will be constructed, and a power line from the town to the airport will be installed. Water and sewage facility improvements also are planned.

**Gjoa Haven:** Runway construction started in 1981, will be completed during the next year.

**Hall Beach:** The runway will be widened and construction will begin on the new passenger/cargo shelter.

**Igloodik:** It is expected that VASIS will be installed during 1982.

**Repulse Bay:** A passenger/cargo shelter will be constructed and work will continue on runway construction and improvements.

**Spence Bay:** A passenger/cargo shelter will be constructed and screened material will be placed on the runway extension.

**Whale Cove:** A new field electrical centre will be constructed and a VASIS is scheduled for installation.

### **Western Region**

In the Western Region there are 9 Arctic A airports (Cambridge Bay, Fort Simpson, Fort Smith, Hay River, Inuvik, Norman Wells, Yellowknife, Watson Lake and Whitehorse) and 30 Arctic B and C airports.

The region has continued its program of converting appropriate flight service stations to community airport radio stations, staffed by observer/communicators. Nine airports are now staffed and operational: Faro and Old Crow in Yukon Territory, and Aklavik, Fort Resolution, Fort McPherson, Fort Good Hope, Holman, Wrigley and Sachs Harbour in the Northwest Territories. It is planned that Teslin will be converted in the fall of 1982.

In addition to specific airport construction projects, planning is under way to develop the air transportation infrastructure needed to provide service to resource development areas in the Western Arctic and Yukon. Either feasibility studies or project definition work are under way for Beaufort Sea developments at Tuktoyaktuk and for mining operations at Faro. Also, the effect of northern pipelines on airports along the Alaska Highway and at Norman Wells on the Mackenzie Highway is being assessed. As resource development continues in these areas, airport facilities may be expanded using resources other than those provided under the Arctic Airports Facilities Policy.

A status report on construction at Western region Arctic sites in 1981-82 follows:

### **Review of 1981-82**

**Aklavik:** Airport development work is 90 per cent completed. Some surface gravel work is required on the apron and taxiway. All other facilities are in place.

**Coppermine:** A safety fence separating airside and groundside activities was installed.

**Fort Good Hope:** Brush clearing around the VOR site was completed during the year.

**Fort Liard:** Brush clearing to satisfy zoning requirements is nearing completion.

**Fort McPherson:** During the summer of 1981, clean-up of the shale borrow pit was completed.

**Fort Norman:** Development of the runway, taxiway and apron continued over the year. Installation of visual aids is now 70 per cent completed. An airport access road was completed and the power supply installed in 1981.

**Rae Lakes:** Equipment for recording wind speed and direction was installed during 1981-82.

**Sachs Harbour:** Airport development work is now completed and visual aids, equipment for dispensing fuel and a safety fence have been installed.

**Tuktoyaktuk:** A safety fence was installed and the NDB was relocated to a site on the airport.

**Burwash:** Installation of taxiway and apron lights has been completed.

**Faro:** A feasibility study on airport expansion was continued.

**Mayo:** VASIS, lighted windsocks, and a rotating beacon were installed in 1981.

**Old Crow:** Brush clearing work to meet zoning requirements was started.

**Ross River:** Airport development began in 1981-82. The runway, taxiway, apron and graded areas are approximately 95 per cent completed; the passenger/cargo shelter is about 70 per cent finished.

**Hay River:** The overlay for Runway 12/30 was completed during the year and one pick-up truck and one wobbly-wheel packer were purchased.

**Inuvik:** Work continued on the water supply for the air terminal building. Also, an area spreader and a wobbly-wheel packer were purchased.

**Cambridge Bay:** Gravel runway improvements were carried out over the year, as were repairs to the air terminal building. Repairs to the roof of the maintenance garage were also completed.

*Whitehorse:* Conceptual studies on the new air terminal building continued in 1981. More safety fencing was installed and two pick-up trucks, one cargo van, one wobbly-wheel packer, one 1½-ton truck, and a CRV 1000 fire truck were placed in service.

*Watson Lake:* A storage building was assembled at the maintenance garage and site housing was upgraded as part of an annual program.

*Fort Smith:* A garden tractor and a pick-up truck were purchased.

*Norman Wells:* A wobbly-wheel packer and a Mark 10 fire truck were supplied. Areas were developed for storing equipment and materials and for carrying out fire training.

#### **Plans for 1982-83**

During 1982-83, facilities for the handicapped will be developed and upgraded at all sites listed below in accordance with the Department's Policy for the Provision of Handicapped Facilities.

*Cambridge Bay:* Surface improvements to Runway 1331 are planned, and it is expected that official zoning regulations will be promulgated for the airport in 1982.

*Fort Simpson:* Plans call for the replacement of a runway sweeper and the installation of ILS/RVR/NDB for Runway 30.

*Fort Smith:* Removal and replacement of asbestos insulation in the maintenance garage is scheduled, as is the overlay of Runway 11/29, including the apron and taxiway, and recabling of the airfield lighting system. DVOR/DME and related equipment will be installed.

*Hay River:* The air terminal building and maintenance garage will receive an energy retrofit in 1982 and the VOR will be converted to DVOR. Further work includes upgrading the flight check facility and reworking runway approaches.

*Inuvik:* Roof repairs for the air terminal building, maintenance garage, powerhouse and rawinsonde building will be carried out this year. Alterations to the facility for emergency services administration are planned.

*Norman Wells:* Plans call for the removal of asbestos from the maintenance garage and repairs to the aircraft parking apron.

*Watson Lake:* A new powerhouse distribution centre and IPU will be installed, and official zoning regulations will be promulgated for the airport.

*Whitehorse:* The preliminary design for the new air terminal building is expected to be approved during 1982-83. The maintenance garage and firehall energy retrofit programs will be carried out.

*Yellowknife:* Plans call for the overlay paving of Runway 15/33, taxiway "A", and aprons 1 and 2. Also planned is an upgrading of the maintenance garage; the construction of a temporary pre-boarding security screening facility and an energy retrofit of the terminal building. Finally, it is planned to pave part of the air terminal access road.

## **Canadian Surface Transportation Administration**

### *Surface Policy, Planning and Urban Programs Branch*

#### **Responsibilities**

The Branch manages the Urban Transportation Assistance Program (UTAP), which shares the cost of studies and capital works designed to make urban transportation systems more efficient.

#### **Review 1981-82**

During 1981-82, a new bus was acquired for Whitehorse.

#### *Water Transportation Assistance Directorate*

The Water Transportation Assistance Directorate subsidizes essential water transport services for which all costs cannot be covered by rates charged to users.

#### **Review 1981-82**

The Directorate's main Arctic activity is the subsidization of the Northern Transportation Company Limited (NTCL) barge services from Churchill to the Keewatin ports. In 1981-82, this subsidy amounted to \$650 000.

## **Canadian Marine Transportation Administration**

#### **Responsibilities**

The Canadian Marine Transportation Administration (CMTA) works to make the national marine transportation system both efficient and safe. The administration is composed of the Canadian Coast Guard, the National Harbours Board, the Ports and Harbours Directorate, the St. Lawrence Seaway Authority and the Atlantic, Laurentian, Great Lakes and Pacific Pilotage Authorities. In the Arctic, the administration provides facilities and services for commercial and re-supply shipping.

### Responsibilities

The Canadian Coast Guard (CCG) co-ordinates the delivery of cargo to northern communities for the Canadian government, the United States Air Force (USAF) and Canadian commercial interests. It also provides ice and route information and icebreaker services. The Directorate carries out environmental research and surveys, installs, operates and maintains marine navigation aids and a network of Coast Guard radio stations and carries out search and rescue operations. Finally, the Directorate administers the Navigable Waters Protection Act (NWPA) and Arctic Waters Pollution Prevention Act (AWPPA).

### Review 1981-82

The Canadian Coast Guard co-ordinated and conducted the annual re-supply operations in the eastern Arctic. It assisted in the delivery of fuel, equipment and other commodities by ship to isolated bases, communities and Distant Early Warning (Dewline) Sites. It also provides ice routing and icebreaker escort to commercial shipping, particularly on the Hudson Bay route to Churchill, and to ships calling at Frobisher Bay, Strathcona Sound, Resolute Bay, Rae Point, Little Cornwallis Island, Eureka and at sites in Foxe Basin.

Eastern Arctic sealift operations used the services of three commercial carriers operating a total of 10 vessels. Delivery was made to 44 sites, including civil settlements, Dewline Sites in Canada and Greenland, and scientific stations. A total of 11 613 tonnes of dry cargo and 33 313 tons of petroleum, oil and lubricants in bulk was delivered. There was a literal movement of five tonnes of cargo within the Arctic, and 151 tonnes were shipped south to Montréal and Ogdensburg, N.Y.

Personnel from the Arctic Sealift section also assumed port warden duties at Nanisivik and monitored the loading of a total of 131 482 tonnes of lead and zinc ore.

The NORDREG/ECAREG VTM systems and the Frobisher Bay ice office monitored operations and kept track of shipping movements, provided ice information and ice route services and deployed icebreakers where required.

During the season, a total of 99 vessels, including Coast Guard ships, entered the Arctic Canada traffic zone. Five vessels sustained damage, three were defective, and one lacked the necessary navigation charts and publications. During the 1981 season, no land or sea-based pollution incidents were reported to the NORDREG centre.

The Coast Guard monitored Beaufort Sea drilling operations in co-operation with the Department of Indian and Northern Affairs to determine the extent to which vessels were operating with due regard to safety, and to prevent pollution by ships.

Plans for carrying out the recommendations of the study "Maritime Mobile Communications in the Canadian Arctic", referred to in the previous GAIN report, are underway. Three regions (Newfoundland, Laurentian and Western) are responsible for designing the communication system and estimating its cost. Headquarters is responsible for obtaining funding. The intention is to install communications equipment and facilities at 17 locations in the Arctic.

Ten Canadian Coast Guard icebreakers were deployed in the 1981 northern re-supply operations. The vessels provided icebreaking services for commercial shipping and carried out special projects on behalf of industry and government departments. Most of these projects involved hydrographic, oceanographic and scientific surveys for the Defense Research Establishment Pacific, Department of Fisheries and Oceans and Environment Canada.

On June 28, CCGS John A. Macdonald sailed from Dartmouth, N.S., and proceeded to Lancaster Sound to provide assistance to ships bound for and departing from Nanisivik. Later, the Macdonald was involved in hydrographic work until the barge Arvik II arrived. The Macdonald then escorted the tugs and a factory barge to the Polaris mine site on Little Cornwallis Island. Next, the ship continued with a hydrographic and scientific program for the Defense Research Establishment Pacific.

On July 1, CCGS Sir John Franklin sailed from St. John's, Nfld., to the entrance of Hudson Strait to provide icebreaker assistance to shipping. At the beginning of August, the Franklin was deployed to Cape Hatt to assist in an experimental subsidiary project of AMOP known as the "Baffin Island Oil Spill" project (BIOS). This \$5 million program was funded by contributions from DOE, DINA, EMR, USCG, the Canadian Petroleum Industry and the Norwegian Government. The Franklin supported BIOS by transporting to Cape Hatt some \$300 000 worth of equipment to counteract oil spills. The Canadian Coast Guard also contributed to the BIOS project by providing a team of five Coast Guard emergency employees to manage the two experimental spills.

In Mid-August, the Sir John Franklin was diverted from Cape Hatt to assist commercial shipping in the western section of Lancaster Sound and Barrow Strait. At the same time, the Franklin undertook a brief hydrographic survey of Penny Strait. During the first week of September, the Franklin returned to the BIOS site at Cape Hatt and loaded most of the oil pollution equipment it had delivered earlier.

On July 7, CCGS Pierre Radisson sailed from Québec City and proceeded to Hudson Strait to reactivate the aids to navigation and to provide icebreaker assistance to early commercial shipping arrivals. In mid-August, the Radisson was deployed along the east coast of Baffin Island to the High Arctic to assist shipping there. Once in the Lancaster Sound area, the Radisson escorted commercial shipping up to the Eureka weather station for the annual re-supply. The Radisson then ventured further northward to Tanquary Fiord (position: 812N 7656W) to undertake a short hydrographic survey of the area. Twelve tonnes of cargo, including snowmobiles and 518 drums of fuel were unloaded from the icebreaker to the camp for the "Transglobe Expedition". When this phase of the Radisson's mission was finished, the ship returned to Lancaster Sound in early September to continue work on the Breadalbane project. When this work had been completed, the Radisson spent until late September escorting commercial shipping to and from Little Cornwallis Island and other ports of call in the Lancaster Sound area.

On July 7, CCGS Camsell sailed from Victoria, B.C., via Unimak Pass around Alaska to the western Arctic. Once stationed off Tuktoyaktuk, the Camsell activated the required navigational aids and provided icebreaker assistance to commercial shipping in the annual re-supply activities of the Beaufort Sea, Amundsen Gulf, Coronation Gulf, and Queen Maud Gulf. The Camsell returned to Victoria B.C. October 4, after deactivating the aids to navigation in the western Arctic.

On July 24, CCGS Sir William Alexander sailed from Dartmouth, N.S., to the western side of Hudson Bay. While en route, the Alexander carried out oceanographic sampling at various positions. Once in the Chesterfield Inlet area, the Alexander carried out a detailed hydrographic survey from its sounding launch. In early September, the ship made a short journey to Churchill, Manitoba to change crews and to place current meters in selected locations throughout Hudson Bay. On September 24, the Alexander completed the survey.

On July 20, CCGS Norman McLeod Rogers sailed from Hudson Strait. The Rogers, while en route, stopped briefly at Saglik and Killinek to unload cargo before arriving at Frobisher Bay. The ship was involved in laying the summer navigational buoys in this area and in activating the navigation aids. Mid-August, the Rogers was deployed to assist shipping in Foxe Basin.

On an as required basis, the Rogers also assisted the J.E. Bernier with the navigational aids construction program. By early September, the Rogers returned to Killinek and loaded some equipment before sailing south.

On July 27, CCGS J.E. Bernier sailed from Québec City en route to Ungava Bay, Hudson Bay and Foxe Basin via Hudson Strait on a navigational aids construction program. On October 7, this program was completed.

On August 12, CCGS d'Iberville sailed from Québec City bound for Lancaster Sound. While en route, the ship was diverted to provide icebreaker assistance to a commercial tanker engaged in the annual re-supply for Grise Fiord and Eureka. Upon completion of this operation, the d'Iberville proceeded to Nanisivik for refuelling and to assist shipping as required. During the last week of September, the d'Iberville arrived at Frobisher Bay, where the ship was used for lifting the summer navigational buoys and loading two landing craft barges.

On August 24, CCGS Labrador sailed from Dartmouth, N.S., for Hudson Strait. The Labrador worked with CGS Bassin to carry out a detailed hydrographic survey of Foxe Basin and the eastern entrance of Fury and Hecla Strait. By the second week of October, the Labrador was deployed to the Deception Bay area to stand by for shipping.

Before being released from Arctic operations in late October, the Labrador embarked the personnel from Killinek Radio Station and personnel and equipment from Port Burwell.

On July 16, CCGS Louis S. St. Laurent sailed from Dartmouth en route to Nachvak Fiord to conduct a hydrographic survey of the northern Labrador coast. While in the area of Martin Bay, near Cape Chidley, Labrador, the Louis S. St. Laurent located and retrieved the remains of a second World War German weather station, which was established in 1943 by the German submarine U-537. After the St. Laurent's historic sidetrip, the ship sailed further north to Breevort Harbour to continue the hydrographic program. By mid-August, the St. Laurent was released from these duties to escort shipping in the Lancaster Sound area. Thereafter, the St. Laurent escorted ships from Little Cornwallis Island to Nanisivik and to Pond Inlet. Late in the navigational season (mid-November), the ship was assigned to assist as required, the MV Arctic which was undergoing ice trials in the eastern approaches to Lancaster Sound.

#### *National Harbours Board*

The National Harbours Board leases facilities to NTCL for its barge re-supply operations to communities on the west coast of Hudson Bay. The Board also provides facilities and services for loading grain for commercial shipments overseas.

In the previous two years, weather conditions allowed the Port of Churchill to load grain aboard the MV Arctic until November. However, shipping operations in 1981 were restricted to the normal season.

#### *Ports and Harbours Directorate*

CMTA administers certain public port facilities north of 60°, particularly along the Mackenzie River system and in small coastal communities from Amundsen Gulf to Ross Strait in the western Arctic. These facilities are in addition to those provided by the private sector. Facilities in the western Arctic, particularly along the Mackenzie River system are generally suited to shallow draft barge traffic. There were no major changes to these port facilities in 1981, and none are planned for 1982.

In the eastern Arctic, there are two public harbours: Nanisivik in Strathcona Sound on Northwestern Baffin Island, and Frobisher Bay in the southern part of Baffin Island. Last year was the third full operating season for the Nanisivik facility, which consists of three large-diameter steel sheet pile cells with concrete caps and gravel cargo-working areas. Nanisivik Mines Ltd. provided a shiploader and conveyor system for loading mineral products. The facility can be used by vessels of up to about 50 000 tonnes deadweight.

Frobisher has anchorage berths in Koojesse Inlet. This anchorage is subjected to strong tidal runs and is dangerously exposed to north and south winds. In the event of a storm warning, vessels must be prepared for a quick departure. Because the facility has no pier, ships must unload and load all general cargo by means of landing craft that shuttle between ship and shore.

#### *Research and Development*

The Canadian Marine Transportation Administration carries out systematic Research and Development (R&D) in transportation and its related technologies.

Marine R&D is directed to increasing the safety and efficiency of marine transportation and to determining technically feasible alternatives to help meet particular program objectives.

The marine R&D program involves activities with other governments, industry and universities and other departments and agencies within the federal government. It focuses on areas of marine technology that are critical to enabling the Administration to fulfil its mandate. Specifically, R&D concentrates on technology related to:

- vessels (standards and regulations);
- navigation and communications systems;
- emergencies, salvage, and search and rescue;
- pollution prevention and cleanup; and
- marine terminals.

The issues of sovereignty and safety added a new focus to the types of R&D carried out in 1981-82. The major new R&D event in 1981-82 was Cabinet's approval of a \$14 million, three-year Arctic Marine R&D program to be co-ordinated by CMTA. The objective of this program is to carry out a range of mission-oriented R&D projects that will lead to safe and efficient year-round navigation in the North. This is a necessary adjunct to both the development of Arctic resources and the realization of attendant industrial benefits.

In 1981-82, CMTA co-operated with the United States to encourage R&D in marine transportation. For example, Canada and the United States exchanged information on navigation in ice and on vessel vibration and stress.

The MV Arctic is Canada's only "ice-strengthened" bulk carrier. Ice trials of this ship have been accelerated and have yielded valuable information on factors affecting vessels operating under Arctic conditions.

Additional probes into heavy ice by the Canadian icebreakers Franklin and Radisson also have provided valuable data. Much of this information will be used to develop standards and regulations for building Arctic class vessels. It will also be used in arriving at specifications for a new "world-class" Arctic class 8 icebreaker for the Canadian Coast Guard. Cabinet approved the undertaking of design studies for this ship in 1978.

CMTA has also initiated a wide range of projects in co-operation with the marine transportation and shipbuilding industries. While many projects are more relevant to ships and shipping south of 60°, a number of them have universal application.

The Marine Advisory Board is CMTA's primary link with the shipping industry. The Board provides direct feedback on the main concerns of industry in the Arctic and elsewhere. Under the Board's auspices, CMTA has undertaken significant new R&D activities directed to finding methods to detect ice hazards and to develop remote ice sensor systems. Other work has included research into ship ballasting in varying ice conditions, hull corrosion, systems for reducing friction, and new technologies for paving terminals and controlling ice in harbours.

#### *Transportation Research & Development*

##### **Responsibilities**

The Research & Development Directorate of the Department's Planning Group is responsible for interdepartmental policy consultation, and for co-ordinating and planning transportation-related Research and Development in the federal government. The Directorate also has operating responsibility through the Transportation Development Centre (TDC) in Montreal, which carries out R&D projects to serve the needs of the three operating administrations. It also conducts long-range, national R&D projects. Further, through its Energy R&D Program, the Directorate funds energy-related transportation R&D projects.

##### **Review 1981-82**

In June 1981, Cabinet approved funds amounting to \$14 million over three years (1981-82 to 1983-84) for Arctic marine transportation R&D. These funds are co-ordinated and managed by the Department of Transport's Canadian Marine Transportation Administration.

The Centre's Arctic-related R&D in 1981-82 funded through this program was directed toward improving the design and operation of icebreakers. For example, TDC carried out R&D on design of propellers, propeller shafts and related equipment, which are affected by the interaction of propellers with ice.

TDC continued the ice performance evaluation program for the icebreaking bulk cargo vessel, MV Arctic, and completed the data collection phase in 1981-82. The detailed data analysis phase is now beginning. The study into steel properties and special steels for Arctic class ships also continued in 1981-82.

TDC continued to research the problem of navigation in ice concurrently with the advances it encourages in Arctic vessel construction standards. The need to avoid or at least minimize major ice-ship confrontation continues to have high priority among ship operators, and therefore warrants much R&D effort. In this connection, TDC is conducting two projects-remote Sea Ice Thickness Sensor Development and Ice Hazard Detection — which concern the use of sonar sensors and other electronic sensing devices as solutions to this problem. TDC is also extensively involved in the enhancement of icebreaker capability through theoretical studies and actual field tests of the dynamic rupture or breaking of ice by air cushion vehicles.

As noted earlier, most of the Centre's R&D efforts for the North are concerned with Arctic vessel research. However, this year, TDC continued the Arctic Snowmobile Technical Study. The objective is to develop a more efficient, reliable snowmobile, specifically for the Arctic.

A new project started this year was a study of truck movements over ice sheets. The objective was to make truck transportation more safe over ice sheet roads. These roads are used during the winter months to cross frozen rivers and lakes in the North. Other new projects include studies on ways to reduce the cost of operating and maintaining Arctic ports and harbours.

The major projects funded under the energy R&D program in 1981-82 concerned Arctic vessel requirements. Projects included testing the structural steel used in the hulls of Arctic class vessels, work on Arctic navigation systems, including the development of ice detection and collision avoidance sensors, and Arctic ways information including ice forecasting and hydrographic studies.

Environmental studies were started relating to the Atlantic "near-offshore" area. Exploratory R&D work on the regulations that might be necessary for offshore drilling vessels was also carried out.

**Summary of Direct Northern Expenditures (000's)**

	\$	%
<i>Total Forecast 1981/82</i>	85 525	100.0
<i>Expenditure by Northern Objective:</i>		
Economic Growth	59 669	69.7
Quality of Life	25 616	30.0
Administration and Support	240	0.3

# Veterans' Affairs Canada

The Canadian Pension Commission ensures that benefits available under the Veterans' Pension Legislation are extended to all eligible veterans and their dependents. Services include counselling, help in applying for benefits available under the pension legislation, and medical examinations for assessing eligibility for benefits. The Vancouver and Edmonton District Offices provide the Yukon and the Northwest Territories with the same services as those available elsewhere in Canada.

Pension applicants in the Yukon and the District of Mackenzie, Northwest Territories obtain free legal assistance from the Bureau of Pensions Advocates through the District Office in Edmonton. Veterans in other parts of the Northwest Territories are served through the Winnipeg District Office. Applicants in the Yukon or the Northwest Territories may, however, deal with any district office.

If an appeal is heard by an Entitlement Board, the Canadian Pension Commission will provide travel expenses of the applicant and his witnesses to the place of hearing.

## **Review 1981-82**

At March 31, 1982, 37 veterans or their families in the N.W.T. were receiving pensions for disability or death. In the Yukon, 73 recipients had been awarded similar pensions. In the Northwest Territories, there were eight recipients of either War Veterans Allowances or Civilian War Allowances, and 46 such recipients in the Yukon.

## **Responsibilities**

Veterans' Services of the Department of Veterans' Affairs provides health and social services, financial assistance and counselling to eligible veterans and their dependents. The Department also provides services to certain civilians whose work was closely related to that of the Armed Forces during wartime. The program has no district offices in the Yukon or Northwest Territories because of the small number of clients. Instead, counsellors visit the Yukon from the Prince George District Office; the Northwest Territories are served from the Edmonton District Office.

The Veterans' Land Administration works through the Veterans' Land Act to provide financial help to veterans and their heirs, or representatives to acquire title to properties on which they hold an agreement for sale.

## **Summary of Direct Northern Expenditures (000's)**

	\$	%
<i>Total Forecast 1981/82</i>	476	100.0
<i>Expenditure by Northern Objective:</i>		
Quality of Life	476	100.0

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Territorial  
Governments



# Government of the Northwest Territories

## **Responsibilities**

The Northwest Territories Government has jurisdiction within the Northwest Territories, but does not control natural resources (except game which is a territorial resource).

## **Legislative Assembly of the N.W.T.**

The second full year of the Ninth Legislative Assembly's term was a productive one. In January 1981, Hon. Tom Butters became the first Minister of Finance for the Northwest Territories. Hon. Kane Tologanak became Minister of Government Services and Hon. Dennis Patterson became Minister of Education. With these new members, the Executive Committee has its full complement of seven elected ministers.

## ***Fourth Session of the Ninth Assembly***

The budget session of the Ninth Assembly opened in Yellowknife on February 4th 1981 and adjourned on March 13th.

In his opening address, Commissioner Parker commended the ministers and all members of the Assembly for their hard work in ensuring that the voices of the people of the North had been heard during the constitutional debate. He particularly noted that the federal government had recognized aboriginal rights and the right of territorial ministers and native leaders to take part in first ministers' conferences on matters affecting them.

Interpreter Corps translating simultaneously for the Legislative Assembly.



Commissioner Parker also said that the Territorial Government would be developing a strategy for energy self-sufficiency, a strategy that would give the North access to secure energy supplies at stable prices. He said the ministers would continue to press the federal government to consider providing a direct share of revenues from the resource development in the North.

#### *Legislation*

The Assembly passed all 16 bills introduced at this session.

The following new financial ordinances were enacted:

- Appropriation Ordinance 1981-82: to provide \$374 276 000 to cover the expenses of the public service of the Northwest Territories for the 12 months ending March 31, 1982.
- Supplementary Appropriation Ordinance, No. 3, 1980-81: to provide \$7 159 200 to cover additional expenditures for the public service for the financial year.
- Financial Agreement Ordinance 1981: to authorize the Commissioner to enter into an agreement with the Government of Canada providing for the payment of operating and capital grants to the Government of the Northwest Territories.
- Loan Authorization Ordinance Number 1, 1981-82: to authorize the Commissioner to borrow funds for the purpose of making loans to municipalities and to persons.
- N.W.T. Housing Corporation Loan Ordinance 1980: to authorize the borrowing of funds by the N.W.T. Housing Corporation for the construction or acquisition of public housing projects.

Among the amending ordinances enacted were:

- Boilers and Pressure Vessels Ordinance; Electrical Protection Ordinance; Fire Prevention Ordinance: to allow the Commissioner to adopt certain codes or standards by regulation.
- Justice of the Peace Ordinance: to enable the Commissioner to appoint Juvenile Court judges and to enable the Commissioner to make regulations establishing a Justice of the Peace advisory council.
- Liquor Ordinance: to provide for increased penalties for people unlawfully supplying liquor, and to provide immunity to peace officers or designated persons who breach the Ordinance for purposes of obtaining evidence.
- Lotteries Ordinance: to allow the Commissioner to regulate and licence persons or organizations conducting and managing lottery schemes as permitted pursuant to the Criminal Code of Canada.
- Income Tax Ordinance: to ensure that the tax base on which income tax for the Territories is computed is not eroded.
- Council Ordinance: to provide for revised constituency allowances and revised salaries for House officials, including a second Deputy Chairman of committees of the whole and to provide for payment of certain specified expenses of the Speaker of the House.

Mr. Butters, as Minister of Finance, presented his first budget speech to the House. He emphasized the need for constant, responsible fiscal restraint. He noted, however, that funding would be increased in three priority areas: political and constitutional development; renewable resources; and, economic development.

He said the federal government will offset the extraordinary costs of energy incurred by the government and would receive a special funding submission in the political, resource and economic development areas.

Mr. Butters also mentioned a proposed formula-based funding arrangement that will be presented to the federal Cabinet. The arrangement would provide the Territorial Government with a reasonable, predictable level of funding early in the budget process.

The Minister indicated that three areas would receive priority for next year's budget: development of a three-year forecast of the basic program costs of all departments to plan for negotiations with the federal government; refinement of the accountability-base budgeting system; and, a substantiation process for negotiations with the federal government.

The standing committee on finance presented a report entitled *Responding to Non-renewable Resource Development*. This report was discussed in committee of the whole which recommended that certain areas in the N.W.T. be designated as "developing Zones, and that a policy be established to cover them.

The special committee on education, which was established to consider all aspects of education in the N.W.T., gave its recommendations on student aid to the assembly in February 1981. These recommendations prompted a three-day debate. One of the recommendations which resulted from the debate was that all students be awarded a basic N.W.T. student grant. The grant would cover transportation, tuition, books and supplies. The present student aid program will remain in effect while the new grant proposal is being studied.

A motion outlining a detailed response to the federal government's Bill C-48, regulating oil and gas in "Canada Lands" involved a two-day discussion in committee of the whole. The motion suggested that the N.W.T. Government and native organizations form a coalition to make an effective presentation on the Bill to the federal government. It was stated that the Bill should in no way encroach on aboriginal title until land claims have been resolved, and that residents of the Northwest Territories must benefit from exploration and resource development. The motion called for consultation between the N.W.T. Government and the federal government because of the socio-economic implications of massive development of the Territories.

#### *Fifth Session of the Ninth Assembly*

On May 14, 1981, the Legislative Assembly convened in Hay River for the fifth session of the Ninth Assembly. The session adjourned until the next session on May 27, after 10 sitting days.

In his opening address, Commissioner Parker said that northerners are facing great pressures in the areas of resource development and constitutional and political change.

Mr. Parker pointed out that financial restraints were limiting the government's ability to respond to the social and economic effects of new resource development projects. He said that the Territorial Government was studying a new proposal on resource revenue sharing that would complement the proposed arrangement for formula-based financing. This proposed financing arrangement is expected to replace the current method of financial negotiations with the federal government.

All eight bills introduced at this session were passed.

New ordinances enacted were:

- Extra-Territorial Custody Orders Enforcement Ordinance: to allow territorial courts to enforce custody orders of courts of other jurisdictions.
- Home Owners' Property Tax Rebate Ordinance: to provide for rebates of property taxes to home owners in the N.W.T.
- Supplementary Appropriation Ordinance, No. 4, 1980-81: to provide an additional \$1,023,300 for the public service for the 1980-81 financial year.

Among the amending ordinances enacted were:

- Maintenance Orders Enforcement Ordinances: to provide for a continuing method of enforcing payment under maintenance orders.
- Co-operative Associations Ordinance: to provide for the registration in our jurisdiction of co-operative associations incorporated in other jurisdictions and for the amalgamation of associations.
- Public Trustee Ordinance: to increase from \$2 000 to \$5 000 the value of an estate that can be distributed without probate.

The Hon. George Braden presented the government's response to the task force on employee housing. He said that the government's policy would be to move away from providing accommodation for government staff and to encourage the growth of a private housing market.

There would be equal housing benefits for all government employees and government-owned houses would be made available for sale.

Tom Butters, the Minister of Economic Development and Tourism said that federal, territorial and provincial legislation and regulations covering uranium exploration and mining will be reviewed to determine what additional legislation and regulations are needed to ensure human safety and environmental protection in the N.W.T.

The Minister noted that the government had prepared a position paper responding to the Lancaster Sound Green Paper.

By adoption of motions, the Assembly recommended that a plebiscite be held to determine whether or not the people of the N.W.T. favour the creation of a Nunavut Territory.

The Standing Committee on Finance presented its 10th report. The Committee's spending priorities for 1982-83 were: constitutional development; economic development, particularly responding to resource development; education, especially in the area of adult education and training; development of a language policy; recreation facilities for communities; and, the ongoing priority on employment of northern residents, northern purchase and northern business opportunities.

#### *Sixth Session of the Ninth Assembly*

On November 12, 1981, the Ninth Legislative Assembly convened in Yellowknife for its sixth session.

Immediately after the Commissioner's Address, the Assembly set aside all other business and met in committee of the whole to consider matters relating to the Federal Constitution.

At the conclusion of a three-day emergency debate, three motions were adopted:

- The first motion supported the reinstatement of aboriginal rights of the native people of the N.W.T. in the proposed Constitution. It also sought deletion of provisions relating to provincial involvement in the extension of existing provinces into the Territories and the establishment of new provinces.
- The second motion was to establish a Special Committee on the Constitution of Canada, consisting of all members of the Assembly.
- The third motion suspended this session to permit the Special Committee to travel to Ottawa to pursue the Assembly's objectives.

On November 15, the entire membership of the Legislative Assembly, together with support staff, travelled to Ottawa. They met in the Capital with government and opposition M.P.'s, Cabinet members, Senators and senior public servants to explain the position of the Assembly on constitutional matters.

On November 20, the Special Committee met with the Prime Minister.

The Assembly's extensive lobbying played a major role in the decision of the federal government, with the consent of nine premiers, to reinstate aboriginal rights provisions in the constitution resolution as finally adopted.

The sixth session resumed in Yellowknife on the twenty-seventh of November and continued until the fourth of December.

After hearing a report on the Ottawa visit, the Assembly adopted an action plan to continue pressure for constitutional change including: possible legal action, possible provincehood for the N.W.T. and further discussion with the provincial premiers. The Assembly was particularly concerned that provincial involvement in creating new provinces and extending provincial boundaries would remain in the new Constitution Act.

Several reports were considered at this session. The Assembly endorsed the interim report of the Special Committee on Education. The report of the Special Committee on Impact was accepted as valuable information in preparation for a plebiscite on the division of the Territories. The Assembly approved a recommendation of the Standing Committee on Finance for a two-year pilot project to assist Pelly Bay with a freight subsidy on specific food items and to further study freight subsidies in the Northwest Territories.

There were 19 bills passed at this session; most were administrative. Of major significance was the plebiscite ordinance which set up the mechanism for holding plebiscites in the N.W.T., particularly one on division of the Northwest Territories.

#### *Standing and Special Committees*

The Standing Committee on Finance was active and held meetings between and during sessions. The Committee hired a consultant to assist with the report "Responding to Non-renewable Resource Development". The Committee also travelled to Tuktoyaktuk to see the problems facing a community affected by this kind of development.

The Committee also undertook a review of the cost-of-living in the Northwest Territories, in response to debate and presentations made at Assembly sessions in 1980-1981.

The Committee performed its usual function of reviewing the financial forecasts and main and supplementary Estimates before presentation to the Assembly.

As a result of much debate in the House on the possibility of separation, a Special Committee on Constitutional development was formed to determine the views of the western Territories.

The Special Committee on Education held 32 public hearings on education throughout the Territories. It is scheduled to present its final report at the 1982 spring session.

The Special Committee on Impact was formed as a consequence of the Unity Committee's recommendation passed in Frobisher Bay in November 1980. The Special Committee studied how the division would affect the Northwest Territories if it were split into eastern and western Territories. The Committee engaged a consulting firm to assist in its task. A sub-committee formed from the Special Committee travelled to communities with the consultant and met with residents and officials of native organizations throughout the Territories. The Committee presented its final report at the November 1981 session.

#### *Clerk of the Legislative Assembly*

The Office of the Clerk of the Legislative Assembly has two primary functions: It advises the speaker, chairmen of committees of the whole and individual MLA's on parliamentary procedure. It also provides administrative and support services to the Assembly and its standing and special committees. As a result of a large increase in the Office's workload, four new positions — public affairs officer, finance officer, stenographer and receptionist were added.

#### **Office of the Commissioner**

The authority of the Commissioner, as defined by the Northwest Territories Act, remained unchanged throughout 1981. His role, however, is changing, as elected executive members assume more and more departmental and executive functions.

Commissioner John Parker remained directly responsible for the Departments of Information and Personnel. He also continued to chair the Executive Committee and the Financial Management Board.

The Honourable John Munro, Minister of Indian Affairs and Northern Development, travelled four times to the Northwest Territories, including one visit to the Delta and Mackenzie Valley communities. His purpose was to hear the concerns of the people about major resource development projects. In recognition of the important role that it must play in many aspects of non-renewable resource development, the Territorial Government established an Energy and Resource Development Secretariat. The Secretariat will co-ordinate the government's activities in this area.

Issues surrounding the proposed patriation of the Canadian Constitution, and constitutional and political development within the N.W.T. were among matters that the Executive Committee addressed.

In November, the Commissioner went to Ottawa with the Legislative Assembly's Special Committee on the Constitution for meetings with federal Cabinet Ministers, Members of Parliament and the Prime Minister.

Deputy Commissioner Bob Pilot, the Executive Committee member responsible for the Department of Public Works and for the Regional Operations Secretariat, holds the position of Chairman of the N.W.T. Housing Corporation, the Audit Committee and the Capital Planning Committee.

Mr. Pilot's regional operations responsibilities included the restructuring of N.W.T. regional administration with the creation of the Central Arctic region. This new region provides residents of the coastal communities with a full range of locally administered programs and services. With its headquarters in Cambridge Bay, the region includes the communities of Holman Island, Coppermine, Gjoa Haven, Spence Bay and Pelly, as well as Bay Chimo, Bathurst Inlet and Contwoyto Lake.

Mr. Pilot directed the establishment of a housing implementation group to encourage private home-ownership in the Territories. Steps have been taken to assist private homeowners with the high cost of utilities. The implementation group has also developed procedures for the sale of government-owned accommodation to the public.

Mr. Pilot's involvement in developing both capital and operations and maintenance budgets for the Government of the N.W.T. culminated in his leading the territorial delegation to the inter-governmental committee meetings in Ottawa, where the 1982-83 budget was negotiated with the federal government.

#### *Justice and Public Services*

George Braden assumed responsibility of the Justice and Public Services portfolio on January 5th, 1981. His thorough review of the Department's prime roles and functions led to a decision to shift the Department's emphasis toward its justice functions.

In April, the Minister directed that the Department decentralize its activities to the regions. The objective was to enable the Department to respond more easily to the needs of all N.W.T. residents.

At the same time, final negotiations for transferring the administration of the Mining Inspection Services Program from the federal to the Territorial Government were taking place. The transfer became effective on June 1, 1981. The Department is now involved in a major review and revision of the N.W.T. Mining Safety Ordinance and mine safety rules.

One of the Department's more important advancements was to become more involved with territorial/provincial matters. The Minister attended several provincial Attorneys General meetings and presented the views of the Territorial Government on the justice function.

The Department is placing additional emphasis on consumer and commercial affairs. It is also responsible for administering the Police Services Agreement, which provides for the services of the Royal Canadian Mounted Police in the Northwest Territories.

#### *Legal Division*

The Legal Division provides legal advice and services to all government departments, boards, the Executive Committee and the N.W.T. Housing Corporation. This Division is also responsible for drafting Territorial regulations and bills for submission to the Legislative Assembly. It also drafts orders and provides legal opinions.

The Division also administers the Criminal Injuries Compensation Program in accordance with the Criminal Injuries Compensation Ordinance; through the Office of the public trustee it also administers estates.

#### *Court Services*

Court Services is staffed by one Supreme Court judge, three Territorial Court judges and 29 support staff. One of the Territorial court judges and three support staff are permanently posted in Hay River. All Courts travel on circuit to communities in the Northwest Territories.

There are 102 Justices of the Peace in the various communities; 53 are of native origin. During 1981, the Territorial Courts processed 7 296 criminal cases. Justices of the Peace heard 2 916 (40 per cent) of these cases.

A conference and training seminar for Justices of the Peace was held in Yellowknife in October. Members from all regions attended. In addition to the annual meeting of the J.P. Association, formal training was given on matters such as judicial interim release, show cause hearings, evidence and sentencing.

A manual entitled *Jury and the Justice System in the Supreme Court of the Northwest Territories* was prepared by Mr. Justice Tallis and members of the Supreme Court staff. The purpose of this manual is to inform potential jurors of their duties and responsibilities.

#### *Legal Registries — Land Titles*

The number of land titles registered during the last quarter for which statistics are available show an increase of almost 20 per cent over registrations in the same quarter of 1980.

The Registrar of companies, societies, credit unions and co-operative associations is responsible for registering both profit and non-profit corporations and for maintaining information on all such corporations. Corporations created outside of the Northwest Territories but carrying on business in the Northwest Territories are also registered. More than 3,200 corporations appear on the corporate register.

There is also a document registry section in which documents that affect the ownership of property and the rights of creditors are filed. During the past year over 6,000 such documents were registered.

#### *Legal Services Board*

The Legal Services Board is responsible for providing legal aid to eligible persons. The Board also acts as the carrier agency for Malliganik Tukisiiniakvik (the legal clinic in the Baffin Region) and the Native Courtworkers program (based in the western part of the Territories). These groups have now become regional committees of the Board, and will eventually carry out some of the tasks now performed by board staff.

The Board and courtworkers have co-operated by placing a courtworker in the Central Arctic community of Cambridge Bay.

Both the Native Courtworkers and Malliganik Tukisiiniakvik take applications for legal aid, interview persons with legal problems before the circuit court arrives and ensure access to a lawyer. These organizations also provide information to the public on legal matters.

The Legal Services Board and its staff administer legal aid. Private lawyers provide the counsel. In 1980-81, legal aid was provided in 1,664 cases.

#### *Highway Transport Board*

The three-member Highway Transport Board regulates the commercial trucking industry under the provisions of the Public Service Vehicle Ordinance.

During 1981, the Board processed 170 applications for renewal of operating authority with 73 resident N.W.T. trucking companies and 97 outside companies. A total of 69 new applications were processed with five authorities being granted and 64 denied.

The Board held committee meetings during the year at Yellowknife, Inuvik, Norman Wells, Hay River and Fort Simpson. It worked closely with the trucking industry, holding meetings concerning the Dempster Highway and the scheduled 1983 opening of the Liard Highway.

#### *Public Utilities Board*

The Northwest Territories Public Utilities Board is authorized under the Public Utilities Ordinance to deal with applications brought before it by utilities operating in the Northwest Territories that supply electricity or natural gas.

The three-member Board held public hearings at Hay River and Yellowknife on rate applications and franchise renewals submitted by such utilities as Alberta Power Limited, I.C.G. (Plains Western) Ltd., and the Northern Canada Power Commission. Applications and subsequent orders are public information and are, therefore, available to the public on request. The Board held six public hearings during the year.

### *Safety Division*

The Safety Division is responsible for safety standards in a number of areas: fire, industrial, electrical/mechanical, occupational health and safety. Labour standards are also administered through this Division.

1981 fatalities and property losses were lower than the record levels of 1980. In 1981, there were 111 fires causing loss of life to three children and three adults, and a dollar loss of \$5,227,825.

Project reviews of new construction totalled 118; a slight decrease over the past year. Construction of two new fire halls began, and others are planned.

The Division placed new firetrucks and equipment in three hamlets; reconditioned vehicles went to four other communities. Worn and unserviceable equipment was replaced. Firefighter training sessions were conducted throughout the Territories. These sessions emphasized the operation of new firetrucks and equipment. Sixty-three members of volunteer fire departments from 24 communities attended the annual seminar in Pine Point, where new equipment was exhibited and training sessions held.

The computer terminal of the Canadian Center for Occupational Health and Safety has greatly expanded the information available to the Occupational Health Section for dissemination to the public. The main objective of occupational health is to distribute information to N.W.T. residents in a readily understandable form.

Current programs include: a review of hazardous chemical agents relating to different trades, an audiometric testing program, a school safety/occupational health program, a program to identify hazards and a system to warn the public about dangerous products.

An increase in industrial activity throughout the western part of the Northwest Territories has caused the accident rate to rise. To deal with this problem, the Safety Division is increasing the number of safety seminars, school safety programs and safety committee meetings. These activities have resulted in more requests for information about safety-related matters.

The Mechanical/Electrical Section implements the Electrical Protection and Boiler and Pressure Vessel Ordinances. This activity involves reviewing plans and designs to ensure that equipment conforms to codes and standards; it also entails examining and certifying equipment and operators. The Section inspects mechanical installations and investigates accidents and fires.

The Labour Section receives and investigates complaints filed under the Labour Standards Ordinance and the Fair Practices Ordinance (human rights). The Section also administers the Wages Recovery and Employment Agencies Ordinances.

The Labour Standards Board hears appeals arising from decisions of the labour standards officer and holds hearings and decides issues in cases of disputed wage claims.

### *Mining Inspection*

The Mining Inspection Division implements all provisions of the N.W.T. Mining Safety Ordinance and mine safety rules. It does so by regularly inspecting mines and by consulting with management and workers. A review of the Mining Safety Ordinance has been completed and amendments and revisions to the legislation are being prepared.

The Mine Rescue Program is also being reviewed. Additional equipment and personnel are being made available to ensure that the ability to carry out rescue operations keeps pace with the rapidly growing mining industry.

### *Consumer Affairs*

The Consumer Affairs Office implements the Consumer Protection Ordinance and the Landlord and Tenant Ordinance. It responds to enquiries and mediates disputes between landlords and tenants. As well, the Office provides the general public with information on federal legislation covering product labelling and advertising.

A review of policy covering lottery licensing has now been completed, and the Office is considering input from the public in formulating the new policy.

### *Consumer Services*

Consumer Services administered drivers' licence tests to 1,113 people. Of those tested, 59 per cent were successful. There were 19,652 drivers' licences issued, compared to 18,416 in the previous year. There were 953 accidents reported. Eleven were fatal. There were 186 injuries and 756 accidents that resulted in property damage.

The number of licensed insurance companies increased to 136 from 124 in the previous year. Ninety-eight licences were issued to insurance agents, brokers, adjusters and salesmen authorizing them to sell life, accident, sickness and general insurance to N.W.T. residents. Eight insurance adjusters received licences.

A total of 325 licences were issued to professionals, and 640 business licences were issued to individuals and companies operating in unincorporated areas.

The vital statistics registry issued approximately 3,643 certificates of all types.

A total of 1,191 births, 267 marriages and 213 deaths were registered, and 164 adoptions and 33 changes of name were processed.

### *Library Services*

Library Services circulates books and other materials from 30 service points. Circulation increased to 122,742 during the 1980-81 year. Younger users of library services account for most of this increase and for more than half of the total circulation.

The request system supplied 2,648 items to borrowers. The system filled 170 requests through the inter-library loan service. This service is provided through the inter-library loan agreement between Alberta and the Territories.

Work to establish a Library Advisory Board and to develop minimum standards for library service within the Territories is continuing.

### *Prince of Wales Northern Heritage Centre*

During the last year, more than 24,000 people visited the Prince of Wales Northern Heritage Centre. They came from all parts of the Northwest Territories and southern Canada, and from as far away as Japan, Australia and Africa.

The archives of the Northern Heritage Centre serve as the official repository for documents pertaining to the history of the Northwest Territories. The archives have been concentrating on making their resources more accessible to the public. Three catalogues were distributed to communities across the Territories and to Canadian archives and libraries.

In 1981, over 1,000 artifacts, specimens and works of art (primarily fine and decorative arts and ethnology) were added to the permanent collections.

Renovations to the north end of the building will provide an environmentally-controlled area that will enable the Centre to host major exhibitions from other institutions.

A Museums Advisory Service with a full-time museums adviser has been established to promote high standards and to make professional expertise from the heritage centre available to community museums, historical societies and heritage groups. The Service has provided help ranging from technical planning advice for the Nunatta Sunaqtangit Museum Society in Frobisher Bay, to a workshop on museum cataloguing methods in Holman.

In the 1981 field season, the Centre co-ordinated and funded five archaeology rescue projects at Contwoyto Lake, Fort Franklin, Rankin Inlet, Gjoa Haven and Repulse Bay. The Centre carried out its own research and restoration project at Kellett's Storehouse on Delay Island. This is an ongoing project.

### **Economic Development and Tourism**

Since assuming responsibility for the Department of Economic Development and Tourism in January 1981, Tom Butters has increased services to private business and has made considerable progress toward the goal of shifting all government-owned enterprises to the private sector.

As the minister responsible for manpower development, Mr. Butters participated in a multi-lateral forum of federal and provincial ministers. He attended federal-provincial ministers' conferences and met with his western counterparts to develop a strategy for increasing provincial/territorial participation in manpower programs.

During 1981, the Minister travelled to promote and develop the tourism industry in the Territories. His itinerary included a visit to Great Britain. After touring the Canol Road, he called for its development as a national heritage road.

Mr. Butters supports a more locally based tourism industry, based upon aid from the Territorial Government. The goal is to create a community-oriented strategy for developing the tourist industry in the Eastern Arctic. The "tourism zone" approach has led to zone associations being established for the Yellowknife area, south of the Great Slave Lake, the Keewatin and the Mackenzie Delta.

The Department has developed a policy covering parks that has enabled to N.W.T. parks to achieve equal status with those in the provinces. The federal government has shown its acceptance of this policy by concurring with Territorial Government's terms and conditions for creating a new national park on Ellesmere Island.

Mr. Butters concluded socio-economic agreements for a number of resource development projects taking place in the Territories. These include Cominco's Polaris Mine and Echo Bay Mines' Lupin project. All other non-renewable resource development projects, planned or underway, are expected to fall under similar agreements.

To enable the people of the N.W.T. to realize the maximum benefits possible from the Norman Wells Pipeline and oil field development, Mr. Butters worked to ensure that the federal government transfers adequate contingency funds to the Government of the Northwest Territories.

In the area of cost-shared agreements, the Minister was actively involved in negotiating a new, comprehensive subsidiary agreement under the general development agreement. He was also involved in developing resource-revenue sharing mechanisms with the federal government.

### *Commerce*

The Commerce Division includes five services: small business development, co-op development, commercial enterprise operation, marketing and financial services. It is responsible for advocating, stimulating and supporting entrepreneurial activities in the Northwest Territories.

The N.W.T. government provides technical advice on financial management, marketing, and training to new and existing businesses. It also provides limited financial assistance to businesses experiencing difficulties and to community groups for pre-investment studies and core-funding purposes.

The Division has prepared guidelines acceptable to resource developers which will allow smaller, local businesses, when competitive, to participate in the "spin-offs" that result from major economic activities.

The Division provided technical assistance and financial support to the lumber and fishing industries and to the expanding Country Foods Program.<sup>1</sup> Memberships were retained in related industry associations, such as the N.W.T. Lumbermen's Association (grade stamp agency) and the Great Slave Lake Fishery Advisory Committee. These organizations are committed to encouraging viable businesses in their respective sectors.

The Division provided technical advice to arts and crafts enterprises in the regions and assistance was given to both the N.W.T. Arts and Crafts Council and the arts and crafts program of the Native Women's Association. In the latter case, funds were provided to conduct two training workshops and also to financial inventories.

<sup>1</sup> The program is designed to harvest natural food, and market it commercially.

Information and assistance was provided to southern galleries exhibiting the work of northern artists. For example, the Division assisted both the Winnipeg Art Gallery, which exhibited the work of Rankin Inlet artists, and the newly opened Restigouche Art Gallery in New Brunswick.

During the year 1980-81, six meetings of the Eskimo Loan board were held, resulting in 36 loans being approved totalling \$1 897 000. One meeting was held jointly with a Special A.R.D.A. meeting in Frobisher Bay in September, 1980.

Seven meetings of the Small Business Loans and Guarantees Board were held, all in Yellowknife. It approved fifteen loans totalling \$592 000, and guaranteed 36 loans having a total value of \$495 000.

Five special A.R.D.A. meetings were held with 69 approvals totalling \$2 461 000.

The financial services operation is constantly adjusting its program to keep up with the changing needs of its clients. During the year, greater use was made of Canadian Executive Service Overseas people to assist businesses experiencing technical, financial or management difficulties.

A number of funding requests in excess of the loan limit have been received. Where possible, loans have been made on a joint venture basis with the Federal Business Development Bank. This arrangement has been in effect for the past three years and is working well. However, the size of some loans indicates that the small business loan fund should be expanded. Draft legislation to meet this need is now being prepared.

The co-operative system in the N.W.T. continues to grow. Sales and other revenues totalled \$20 328 925. A net savings of \$836 620 was realized. Membership for the 40 operating co-operatives grew to 4,493, and permanent employment increased to 351 positions with total direct wages and benefits exceeding \$3 500 000. In addition, estimates suggest that as many as 1,500 residents benefit indirectly from co-operatives through the sale of arts and crafts, renewable resource exploitation and related activities.

The Canadian Arctic Co-operative Federation Limited continues to play a key role in the system by providing merchandise and services to its member co-operatives. With financial support from the Government of the N.W.T. and the Government of Canada, the Federation provides operational support, staff training and board development, accounting and auditing services, and helps individual co-operatives to solve problems.

Approval was given to amalgamate the Canadian Arctic Co-operative Federation and the Canadian Arctic Producers Co-operatives. Formal completion of the amalgamation is scheduled to occur in 1982.

As indicated earlier, the Department of Economic Development and Tourism is continuing to "privatize" government-operated enterprises. All enterprises were advertised as being available for either sale or management under contract according to various other arrangements acceptable to the Government of the N.W.T. The Department is reviewing proposals from the private sector for managing the enterprises it now operates.

As a first step toward shifting government-owned businesses to the private sector, the central warehouse in Yellowknife has sold all of its inventory of merchandise, and the Government's central marketing agency has been discontinued.

### *Manpower Development*

The Manpower Development Division provides a focal point on employment, industrial training, apprenticeship and related support programs for Northerners in business and industry.

The Division encourages industry and businesses operating in the North to hire and train northerners. Residents are counselled to take advantage of training and employment opportunities.

Under one of the Division's programs, the Territorial Government, the trainee and the employer contract for employment and practical skill training. The trainee prepares for permanent employment by learning the necessary skills from the employer under actual working conditions. The government pays for part of the trainee's salary and monitors his or her progress. The program is effective in creating employment in many businesses, including the mining and petroleum industries.

The Short-Term Employment Program (STEP) is the Territorial Government's job-creation program. It is aimed at areas with limited wage employment opportunities. Under the supervision of the regions, STEP continues to provide more than 4,000 man-weeks of employment.

The petroleum and mining industries work with the Division in developing methods to train and employ northern labour. In-house training programs covering a wide variety of jobs are used. During the year, the Division negotiated with new mines and major oil companies to use northern manpower as a matter of policy.

The Apprenticeship Program continued to develop skilled tradesmen for northern industry through a combination of on-the-job and in-school training.

As of August 1981, there were 612 trainees in the designated trades across the Northwest Territories. Of these, approximately 100 were employed by the Territorial Government.

Apprentices completing their training and obtaining certification as journeymen totalled 127. Of these, 97 also obtained interprovincial qualification under the "red seal" program.

Under the Tradesmen's Qualification Program, 86 tradesmen obtained journeyman certification, with 10 of these also qualifying for the interprovincial standard "red seal".

### *Tourism*

In 1981, the Department carried out nine major tourism and park projects. These ranged from park construction to assessing the feasibility of community-based tourism in the eastern Arctic. The Department also completed the construction of two major campgrounds along the Dempster Highway. Construction began on a new park on the Liard Highway.

The use of campgrounds and parks increased sharply in 1981, demonstrated by a 50 per cent increase in revenue collections. The forest fire problem in the southern Mackenzie resulted in some fire damage at several Territorial parks.

For the fourth consecutive year, Travel Arctic promotions have drawn an increased number of tourist inquiries. By August 1981, the year's total was 46 000, an increase of 73 per cent over the same period in 1980.

The Department promoted tourism through exhibits at four Canadian sports shows, through direct mail promotions in conjunction with the Canadian Government Office of Tourism and the Yukon Government, and by attending a number of travel-trade and sales meetings.

The western Arctic Visitors Association and the Big River Country Zone Association both played an active role in promoting tourism within the Inuvik and Fort Smith regions.

The Keewatin Chamber of Commerce also participated in several successful promotional activities throughout the year.

#### *Planning and Resource Development*

The Planning and Resource Development Division is responsible for initiating economic development plans and for suggesting policy that will encourage the equitable distribution of economic gains in the Northwest Territories.

The Economic Planning Secretariat is responsible for researching, developing and recommending medium to long-term development strategies to encourage balanced growth of new industry and traditional economic activities. The Secretariat reviews and evaluates new and existing departmental programs and policies to ensure that they meet the objectives of the Territorial Government.

The Mineral and Petroleum Resource Section carried out discussions with Echo Bay Mines, Panarctic Oils, Esso Resources, Dome Petroleum, Cominco, Cullaton Lake Mines, and Cadillac Explorations. These discussions led to the development of memoranda of understanding and the signing of socio-economic agreements.

In future, the Secretariat will emphasize the monitoring and evaluation of explorations and other new developments to seek additional opportunities for northern residents.

The General Development Agreement Section administers the General Development Agreement (GDA), which is largely financed by the federal government. About \$2 million was approved in 1981 under the GDA. Only half of this amount was actually disbursed. Negotiations were underway to sign a new GDA that would have a much wider scope.

Hire North is a project funded by the federal government, but administered by the Territorial Government. It provides training, employment and business opportunities for northerners in trades and occupations associated with the construction and maintenance of highways.

During 1981, there were 130 940 training hours, 22 per cent of total employment. About 80 per cent of the work force were northern residents of Dene ancestry. Employment during 1981 reached 240. Hire North is now constructing a section of the Liard Highway.

#### **Finance**

As Minister of Finance and Deputy Chairman of the Financial Management Board, Tom Butters actively pursued new directions in the financial arrangements between the Northwest Territories and the Government of Canada.

Formal presentations were made to the Government of Canada's Standing Committee on Indian Affairs and Northern Development. This was the first time that the Government of the Northwest Territories had the opportunity to respond to the Committee's review of its budget. A presentation was made to the parliamentary task force on federal/provincial fiscal arrangement. The final report recognized that a longer-term formula financing approach would achieve better results.

The Minister promoted the concept of fiscal accountability and restraint in government and has directed the Department of Finance to develop new revenue and taxation alternatives. At the same time, he lobbied federally for tax relief for northerners and for recognition of resource revenues and tax revenues by non-residents in a taxation year.

The Minister also participated actively in discussions of the Intergovernmental Committee of Finance to develop a government-to-government relationship and promote new fiscal arrangements for the Territories.

During 1981, the Department was involved in implementing a new financial system and provided training courses for financial officers throughout the Government of the Northwest Territories. These courses emphasized the development of internal control procedures and covered the kinds of support needed to carry out regional financial operations. In 1982, the courses will emphasize the improvement of accounting policies and standards and methods of providing better financial information for management.

The Treasury Division is responsible for collecting, managing, controlling and reporting all revenues. Its responsibilities encompass fiscal and economic planning (including the development of tax policies), borrowings, investments and cash management, control of government assets, insurance and risk management.

During the past year, the Division stressed identifying sources of revenue and its subsequent collection.

In 1982, the Division will emphasize fiscal and economic planning in order to maximize tax revenue, and will stress the development of risk management programs and asset controls.

The Comptrollership Division is responsible for preparing financial management information, including the Territorial Accounts; for developing, co-ordinating and implementing financial policies and procedures, which provide for the effective control and reporting of all government expenditures; and, for prompt payment of all government employees.

During the past year, the Division has concentrated on implementing a new financial system. This activity has included the development of financial sub-systems, procedures and training programs.

The Division's emphasis for 1982 will be on establishing effective financial controls and on developing training programs for government financial officers.

### **Financial Management Secretariat**

The Financial Management Secretariat, a central agency of the government, provides advice and support services to the Financial Management Board, a sub-committee of the Executive Committee.

The Secretariat is responsible for planning, co-ordinating, analysing and consolidating the operating budget of the Government of the Northwest Territories and for providing other budget information for the Legislative Assembly.

The Secretariat also provides working support for the government's participation in inter-governmental financial negotiations.

Responsibility for financial analysis of capital budget submissions was transferred to the Secretariat in 1981.

The Secretariat has always supported the concept of government administrative accountability. In 1982, it will co-ordinate the development of indicators of performance for the government's accountability-based budgeting system.

### **Audit Bureau**

The Territorial Audit Bureau reports to the Commissioner and to the Deputy Commissioner, who serves as Chairman of the Audit Committee. Apart from performing internal audits, the Bureau fulfils the role of a provincial auditor general, particularly in performing audits of all federal-provincial cost-sharing agreements and in doing year-end work for the Auditor General of Canada.

During the year, the Bureau carried out audits of most departments, all regions and many settlements. It provided help to local staff and managers in instituting proper accounting procedures, and discussed its audit observations with those in a position to take corrective action.

The Bureau is assuming responsibility for reviewing the budget, and carrying out audits of the Housing Corporation, the General Development Agreement, financial information systems, hospitals, the health information system and several other new or expanded activities.

### **Social Services**

The Department, under Arnold McCallum, Minister of Social Services, continued its efforts to identify and deal with problems of the handicapped. In other areas of social services, achievements included signing a devolution agreement between the Town of Frobisher Bay and the Territorial Government. Under this agreement, the Town became responsible for delivering certain social programs. A new minimum security community correctional centre was opened and a study of the Baffin Correctional Centre was completed.

In recognition of the Year of the Disabled, the Department began work in the Baffin and Inuvik regions to identify the problems of the handicapped and to determine how they might be solved. Some tangible results were achieved. For example, it supported "awareness advertising" that the N.W.T. Council for Disabled Persons had developed for use on the CBC's northern television service. Other examples are noted under "Services to Aged and Handicapped".

A major step in the re-assignment of responsibility for delivering social services occurred with the signing of a devolution agreement between the Town of Frobisher and the Territorial Government as noted above. A transfer of funds to the Town for providing social services was approved. The Town is now responsible for operating child welfare, community correction and financial assistance programs, and for providing other support services to families, the aged and handicapped. The Department encourages similar arrangements with other communities who may wish to assume responsibility for delivering their own social services.

The Minister officially opened the new South Mackenzie Correctional Centre in Hay River in June. The Centre is designed to permit inmates to provide services to the community while serving their sentences.

In 1981, the Department provided two courses at the community college level. These courses were designed to improve and update the knowledge and skills of persons working in the social services field. One was an introductory social work course for child-care workers and social workers. The second was an introductory course in criminology. The staff of Edmonton's Grant McEwan Community College taught both courses.

The Minister attended two provincial/territorial meetings of Ministers of Social Services. He presented the N.W.T.'s views on various topics, including the proposed young offenders legislation and the effect of proposed changes in the Unemployment Insurance Program. He supported other ministers in their call for immediate action with respect to proposed changes in the Vocational Rehabilitation Development Program Agreement.

### **Alcohol and Drug Program**

In 1981, the Alcohol and Drug Program staff continued its program to increase community awareness of alcohol and drug problems.

As part of the Alcohol and Drug Program, the Department developed a curriculum for training native staff who work on community alcohol and drug projects. The curriculum covers treatment methods and program administration.

The N.W.T. Alcohol and Drug Co-ordinating Council renewed funding for 13 alcohol and drug community projects. In addition, two new projects received funding in 1981, one at Rae/Edzo and one at Fort Norman.

### **Corrections Services**

During 1981, the population of N.W.T.'s correctional institutions continued to rise.

A major study of corrections in the Baffin Region, particularly the Baffin Island Correctional Centre, has resulted in a decision to build a permanent structure at Frobisher Bay to replace temporary units. The Baffin Island Correctional Centre offers a land-based program for teaching offenders, particularly those from the Eastern Arctic, many of the traditional hunting and survival skills.

### **Family and Children's Services**

The trend toward older children coming under the care or supervision of the Superintendent of Child Welfare continued during 1981. Their problems are often associated with behavioural difficulties, handicapping conditions or delinquency. The Department has found it necessary to adapt departmental homes (previously used as short-term receiving homes for young children) to residences that provide care and supervision for older, difficult to manage children.

Emphasis was placed on developing foster and adoptive homes to provide care for children of all ages. A special effort was made to recruit more native northerners as group home, foster, and adoptive parents.

The number of young people coming into conflict with the law is causing increasing concern. The Department found it necessary to open a group home service in the Central Arctic and to develop special foster care services in other locations.

The Hay River and Fort Providence Dene bands, with financial and other assistance from the Department, successfully organized and operated three summer camps during 1981.

A working committee has been established with representation from the juvenile justice system. Its objective is to prepare for the implementation of the new federal Young Offender's Act, which is expected to be in effect within two years. The new legislation emphasizes legal representation for young persons and alternative means of both dealing with juvenile offenders and keeping them in custody. The Act is likely to have a major effect on services to juveniles in the Territories.

#### *Financial Assistance Programs*

No food rate increases or additional allowances for persons in need were instituted in 1981. However, the rising costs of fuel and other necessities and the increasing number of applications have resulted in an 18 per cent increase in assistance costs. Approximately 70 per cent of financial assistance expenditures are for food.

A brochure providing information to working parents about the Department's Day Care Subsidy Program was developed with the assistance of the Yellowknife Day Care Association.

#### *Services to Aged and Handicapped*

The Department devoted much effort to determining the needs of handicapped people so that it could develop effective long-range plans. A study of the needs of handicapped people in the Inuvik Region was completed and will serve as a basis for follow-up work being carried out by the Inuvik Council for the Disabled.

A pilot project was conducted in the Baffin Region to determine the feasibility of developing community-based services in three Baffin communities for physically and mentally handicapped children. The results of this project have prompted the development of a regional interdepartmental committee to promote and co-ordinate the development of services.

A group living place for mentally handicapped adults was opened in Yellowknife to help residents of the Great Slave Lake area to develop independent living and pre-vocational skills.

Statistically, the aged form a very small percentage of the population. However, the aged have distinct needs. These are reflected in the increased demand for home care services and in the number of communities working to develop resources to care for aged persons.

#### **Health**

As Minister of Health, Arnold McCallum was involved in several major initiatives during 1981. These included appointing a local board of management to the Frobisher Bay General Hospital and completing two regional health care studies, relating to the Central Arctic and Keewatin regions. A third study addressing the provision of health care services in the Inuvik region will be done.

The Minister also supported the retention of the School of Dental Therapy in Fort Smith. The Department reviewed existing health legislation and policy, and new legislation was drafted to respond to changing requirements in the Northwest Territories for health programs.

The Minister worked to smooth the transfer of health services and the control, operation and management of the Frobisher Bay General Hospital from the federal government to the Government of the N.W.T.

The Minister announced that benefits under the supplementary health programs would be extended. New benefits include transportation, accommodation and meal allowances for N.W.T. residents treated outside the N.W.T. for certain ailments covered under the programs.

The Minister supported introduction of a Psychologists Ordinance which would register psychologists in the N.W.T. and regulate the profession to ensure a high standard of service.

In the policy area, the Department introduced a family life education project, with funding provided by Health and Welfare Canada. Mental health development received continued emphasis during the past year. In St. Johns, at a health conference of provincial and territorial health ministers, Mr. McCallum made strong representation in favour of a single health delivery system in the N.W.T.

#### *Insured Services*

The Department administered a broad range of insured services, including medical care, hospital care, pharmacare, medical travel, and other supplementary benefits. The hospital insurance benefit was extended to cover detoxification services provided by a provincial or territorial approved centre. The supplementary benefits were extended to include congenital kidney malformation and diabetes, for which the full costs of diagnosis, treatment and travel are paid.

The Department of Health and the Department of Social Services jointly fund co-ordinated home care programs in Fort Smith, Hay River, and Yellowknife.

#### *Hospitals and Health Centres*

H.H. Williams Memorial Hospital in Hay River is a modern health centre operated through a board of management, serving residents from the southern Great Slave Lake area, particularly the communities of Hay River, Pine Point, Fort Resolution and Fort Providence.

The facility provides in-patient and emergency services, home care, public and environmental health, social services. It also provides offices for visiting specialists.

The Fort Smith Health Centre is a modern, accredited health care facility operated through a local board of management. It provides in-patient acute care (15 beds), extended/chronic care (10 beds), out-patient and emergency services, home care, physiotherapy, public health and social services. The Centre also provides offices for visiting specialists.

Stanton Yellowknife Hospital is another modern, accredited facility. It is a 72-bed acute care hospital, operated through a board of management. The Hospital provides a wide variety of in-patient services. About half of the patients are residents from outside Yellowknife.

In the area of rehabilitation medicine, the hospital provides occupational therapy, physiotherapy, audiology and speech therapy programs, as well as a psychiatric program, which will service Yellowknife and major centres in the Fort Smith, Central Arctic and Inuvik regions.

Planning is underway for a new hospital in Yellowknife. It will provide 115 acute care and 20 extended/chronic care beds, as well as extended diagnostic and treatment services. It is expected that its design will have been completed and construction started by 1982-83.

#### *Information, Promotion and Awareness*

The Health Resource Centre library is providing current and relevant health information material to professionals in the N.W.T., schools, voluntary agencies and the public.

The Department of Health is developing an ongoing training program and a manual for health promotion officers at the community level. Resource material on hypothermia and carbon monoxide poisoning are being prepared. The Department is also producing a sound-on-slide presentation on breastfeeding.

The Department of Health continued to fund students who are pursuing health careers. A high demand exists in the Northwest Territories for health care personnel. Eight students in health-related areas were awarded bursaries in 1981.

The bursary program helps alleviate manpower shortages in the health area by encouraging health workers to attain additional skills.

#### *Family Life Education*

The Family Life Education Project entered its second year of operation with funding provided by Health and Welfare Canada.

In the first year, the Project emphasized the development of an accurate data base. The second year began with the circulation of this information to both professionals and the general public through newspaper articles and 60-second public service announcements of C.B.C. television.

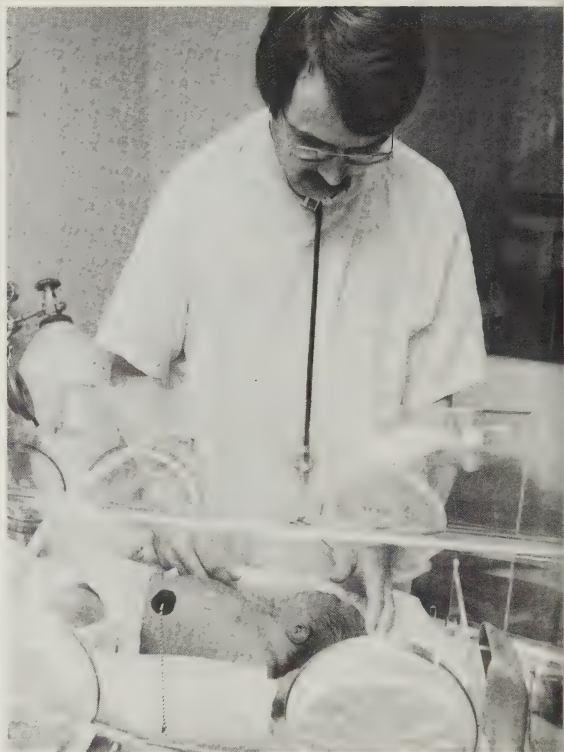
The media campaign brought requests for workshops from the communities of Fort Simpson, Rae-Edzo and Pangnirtung. Workshops were held for community health representatives and nursing assistant students.

#### *N.W.T. Health Care Plan*

The N.W.T. Health Care Plan provides "no-premium" medical care and hospital insurance to eligible N.W.T. residents. The Department of Health's Supplementary Health Program, its Subsidized Medical Travel Program and Pharmacare Program cover certain specified conditions not insured under the Plan.

Everyone registered under the N.W.T. Health Care Plan is eligible for benefits under medicare. The Plan covers all physicians' services carried out in the office, clinic, hospital or home. The Plan also covers certain surgical-dental procedures when required to be performed in a hospital.

The N.W.T. Hospital Insurance Plan is administered under the direction of the Territorial Hospital Insurance Services (THIS) Board, whose members are appointed by the Commissioner with advice from the Legislative Assembly. The Department of Health provides support services to the Board on matters falling under its jurisdiction.



Dr. Jock Lemire, Pediatrician, Frobisher Bay General Hospital.

The Board met several times during 1981. It dealt with the establishment of in-patient and out-patient rates, the need for a mental health program for N.W.T. residents through the Stanton Yellowknife Hospital and the need for additional specialists in the Northwest Territories.

#### **Renewable Resources**

The Minister of Renewable Resources, Richard Nerysoo, worked to ensure that future developments in the non-renewable resource area will not prevent northern people from continuing to harvest the renewable resources of the N.W.T.

With economic activity occurring at an unprecedented rate, including oil and gas development in the Beaufort Sea, the Norman Wells expansion and oil pipeline, mining developments and the Arctic Pilot Project, environmental considerations were of major importance. Accordingly, a new Division of Environmental Planning and Assessment was established to co-ordinate the Territorial Government's participation in environmental reviews and renewable resource planning.

A significant development during the year was the more active role in wildlife management played by the Baffin Region Hunters' and Trappers' Association and the Keewatin Wildlife Federation. Renewable Resources staff have also been holding meetings in the west in an attempt to set up a similar game management board for the Mackenzie Valley.

Mr. Nersyoo met with ministers of the federal government and the provinces of Saskatchewan and Manitoba to address the problem of declining numbers in the Kaministiquia and Beverly caribou herds. An agreement was reached on a co-operative approach to conserving these animals and extensive consultation took place with native hunters. These consultations resulted in the creation of an interjurisdictional Caribou Management Board. The Board includes native representatives from all regions concerned. Government technical staff from each region provides support.

Extensive efforts were also made to reach an agreement with the Yukon on joint management of the Porcupine caribou herd. Native groups in both Territories were consulted and an agreement will likely result.

#### *Wildlife Service*

The wildlife service supports wildlife users through consultation with the hunters' and trappers' associations, and by offering a wide variety of assistance programs.

One new program introduced in 1981 was a gasoline subsidy to help hunters and trappers cope with rising fuel costs. Other programs include fur incentive subsidies, trappers' assistance loans, outpost camp grants and grants to hunters' and trappers' associations.

A new firearm safety instructor's manual and a trapper's manual are being produced by the Wildlife Service. The firearm safety manual will standardize firearm safety courses already being held in some communities by wildlife officers.

A number of fur workshops were held in the Mackenzie Valley and Delta communities. These workshops were a joint effort between the Wildlife Service and local hunters' and trappers' associations, and were designed to ensure long-term optimum fur returns for the trappers.

Graduates of the Renewable Resource Technology Program in Fort Smith have filled four permanent positions with the Wildlife Service. Three became wildlife officers in the regions, and one was hired as a technician in Yellowknife. Training for community resource officers, wildlife guardians, assistant wildlife officers and in-service training is considered a priority.

Caribou surveys were carried out in the Koukdjuak River area, Northern Melville Peninsula, and on the North Baffin Island herds. Calving ground surveys were also carried out on the Bluenose and Beverly caribou herds.

The first year of a three-year polar bear management study began along northeast Baffin Island to gather population data needed to assess the hunting quotas of Clyde River and Broughton Island. The hunters' and trappers' associations have actively participated in the study.

The Wildlife Service, the federal Department of Fisheries and Oceans, and regional hunters' and trappers' associations also worked together to study the feasibility of commercial fisheries in Amadjuak Lake, Baffin Island; in Delise Lake, Paulatuk; and in the Mackenzie Delta.

The N.W.T. Wildlife Service, the Inuvialuit Development Corporation, the Sachs Harbour HTA and the Inuvialuit Game Council worked together to develop sound plan for managing the muskox and Peary caribou herds on Banks Island. This activity involved harvesting 200 muskoxen on Banks Island to test the marketability of muskox meat in northern stores.

Resource exploration and development projects range from small scale quarrying operations to mega-projects like the Norman Wells pipeline. The Wildlife Service is concerned about all projects because of their potential effect on wildlife populations and wildlife habitat. For example, the Wildlife Service participated in the Federal Assessment and Review process (FEARO) and the National Energy Board (NEB) hearings that were conducted for the Norman Wells pipeline project.

#### *Environmental Services*

A new Environmental Services Division administers several N.W.T. ordinances and federal Acts that are intended to ensure that the northern environment remains uncontaminated, and that industry, commercial establishments, and municipalities do as little damage as possible to the air, land and water. When environmental damage does occur, the service takes remedial action and ensures that clean-up is thorough.

A working agreement between the Service and Environment Canada ensures close co-operation and mutual support. Similar agreements with at least two other federal departments are also being considered. The present environmental emergency reporting system will be expanded with development of a statistical data base for computer storage and display.

#### *Science Advisory Board*

The Northwest Territories Science Advisory Board provides advice and support to the Legislative Assembly on matters of science, engineering, and technology. The 13-member board includes both northern and southern Canadians who have scientific backgrounds and a knowledge of science-related problems in the Northwest Territories.

In 1981, two of the Board's regular meetings were held in the Yellowknife area, while the third was held at Pond Inlet and Resolute Bay. The Board also sponsored a conference in Yellowknife that brought together those who use and manage renewable resources. Delegates to the conference discussed problems related to the hunting, trapping and fishing sectors of the territorial economy.

Recent publications of the Board include an assessment of the wind energy potential available to northerners for both domestic and commercial applications.

The Board also produced a summary of the proceedings of the conference on renewable resources, which it had sponsored.

## Energy and Resource Development

An Energy and Resource Development Secretariat has been established to assist Richard Nerysoo, the Minister responsible for energy and non-renewable resource development in the N.W.T.

One of the Minister's major goals is to ensure that N.W.T. residents receive maximum benefits from all energy and non-renewable resource developments in the North.

The Secretariat will develop comprehensive policies and strategies for Executive Committee review and approval. The Secretariat's work will include developing a socio-economic policy that would set socio-economic standards for large non-renewable resource development. The staff of the Secretariat has been directed to assist regional offices in developing plans for minimizing adverse social and economic effects resulting from such development.

To date, the Secretariat has developed an energy policy that was presented to the Legislative Assembly for discussion. It also worked with native and non-native groups in the N.W.T. to ensure that the federal oil and gas Bill C-48 would reflect the interests and concerns of all people in the Territories.

The Minister is working to ensure that N.W.T. residents will be provided with electricity at reasonable cost. With his federal counterpart, he is exploring alternative energy sources to replace expensive diesel generated electricity.

The Minister is also the political focal point for the Executive Committee at public forums such as the National Energy Board, environmental assessment review panels, the Public Utilities Board and various parliamentary hearings on energy and non-renewable resource development.

The Department held discussions with the federal government on funding allocations by the Department of Indian and Northern Affairs for the Norman Wells project. The Department presented its priorities for the project to ensure that the federal government would take the interests of the Territorial Government into account. As well, the Minister developed a joint working position with the Dene Nation and Métis Association of the N.W.T. on common project-related concerns.

## Department of Education

A major concern of Dennis Patterson, Minister of Education, has been the need to increase the relevance of the education system and its programs especially for the Inuit and Dene of the Northwest Territories.

To become fully aware of local concerns, the Minister actively participated in the Special Committee on Education, which held hearings in 45 communities.

During 1981, the Department emphasized native language and cultural instruction, teacher training, greater autonomy and regional education bodies and vocational and post-secondary training for students.

The Minister encouraged the use of the native languages in all areas of instruction and community life. A number of special projects were undertaken in native languages throughout the year.

The Department expanded the Teacher Education Program offered at Fort Smith's Thebcha Collect (formerly the adult vocational training centre). The program at Frobisher Bay was expanded to accommodate people unable to leave their communities to attend the two-year course.

The Teacher Certification Board was enlarged in order to better represent the Northwest Territories Teachers' Association and local education authorities. A representative of the Teacher Education Program was appointed to the board.

Community and regional education bodies were encouraged to assume more responsibility for areas specified in the Education Ordinance and to indicate other areas of possible control.

The Adult Training Centre in Fort Smith assumed the status of a fully accredited college with a governing body. The Centre will meet post-secondary educational needs.

A high school Certification Program was instituted in recognition of the need to provide training for students planning to enter the work force rather than to follow an academic program. The program will first be introduced in the schools in Yellowknife, Frobisher Bay and Inuvik at the beginning of the 1982-83 school year.

The first Minister of Education from the N.W.T. to be a member of the Canadian Council of Education Ministers, Mr. Patterson attended the 37th session of the Council in Fredericton, New Brunswick and the 38th session in St. John's, Newfoundland.

## Programs and Evaluation

The academic staff of the University of Saskatchewan reviewed the entire core curriculum. Work was done in-house on a review of the N.W.T. kindergarten program.

A year-long study on bilingual education was completed. As a result, several initiatives were taken in developing the N.W.T. Teacher Education Program and in promoting native language development among Dene communities. A project to develop a bilingual teaching materials project was undertaken at Fort Providence in co-operation with the local Dene band. The Department also funded the development of a similar Slavey language project at Fort Good Hope. It provided continuing support for the Loucheux program at Fort McPherson and for the Slavey program at Fort Franklin.

In the eastern Arctic, the base of the Teacher Education Program was expanded. The aim was to better prepare staff to teach in the native language as well as in English. More effort also went into preparing Inuktitut learning materials.

During 1981, the Department particularly emphasized service to the handicapped. A committee from the Departments of Education, Health and Social Services worked to place handicapped students in an appropriate instructional setting.

Several medium-sized communities have asked the Department to expand the grade levels offered. During 1981, grade 10 level Alberta programs were combined with territorial programs and offered in Aklavik, Pangnirtung, Pond Inlet and Cambridge Bay.

## Adult Vocational Training Programs

In 1981, the Department began to develop a two-year diploma level business administration program, later to be made available at Fort Smith. College level courses currently available there include Dental Therapy, Teacher Education and Renewable Resources.

The Department, in co-operation with Dome CanMar, provided courses in seamanship at the Dome CanMar base in Tuktoyaktuk. The courses were offered to train personnel for off-shore employment in the oil industry.

After the approval of the Norman Wells pipeline project in Yellowknife had been announced, the Department set as a priority, adult skills upgrading in Mackenzie Valley communities and vocational training by establishing a new school at Inuvik and expanding the existing one at Fort Smith.

#### *Support Services*

The Support Services Branch is responsible for the administration of the higher education program, including finance, statistics, capital planning, personnel, teacher certification, and legislation and policy development.

The Department of Education's operating budget was \$48 859 000 for the 1981-82 fiscal year. The Department also received \$16 007 000 in capital funds through the 1981-82 Estimates. In the 1981 school year, 610 teaching positions provided instruction for 12,567 students.

During 1981, there was much debate in the Legislative Assembly on financial support for post-secondary students. The Department of Education continues to use the existing Student Grants and Bursaries Ordinance and Regulations. The Student Aid Program is being revised as directed by the Legislative Assembly. In 1981-82, the Student Grants and Bursaries Board approved 355 grants and 23 bursaries.

At the close of the 1980-81 school year, the Minister of Education attended the opening of the new Matonabee School at Pine Point, which replaced the one destroyed by fire in February 1980. Construction proceeded on a new junior high school to replace the William McDonald school in Yellowknife. A new elementary/junior high school is being built in Rankin Inlet to replace the Maani Ulujuj facilities. Planning also began for new schools for Lac La Martre, Norman Wells and Clyde River, and for a new high school in the Keewatin.

A major development was the approval by the Executive Committee of a policy to develop a college system in the N.W.T.

#### **Government Services Department**

The Government Services portfolio is a relatively new one. It originated as a result of the Commissioner's task force on administration. Two of the Department's main functions are purchasing goods and materials and maintaining appropriate inventories of all goods and materials.

The Minister, Kane Tologanak, introduced a northern purchasing policy. This policy directly affects the northern economy because it gives northern suppliers a preference over suppliers from southern Canada. To date, the Department has signed more than 30 standing offer agreements with northern suppliers. Before the policy had been introduced, most of these agreements would have been made with southern suppliers.

The Department monitors the annual re-supply in the Territories and assesses the possible effect of non-renewable resource development projects on shipping patterns in the eastern Arctic. The Department also monitors and presents briefs to the Canadian Transport Commission to ensure adequate airline service to the residents of the Northwest Territories.

Supplying petroleum to more than 40 communities not served by private oil companies is another departmental responsibility. Local contractors deliver the fuel within each community.

In August 1981, responsibility for energy conservation was transferred from the Department of Renewable Resources to the Department of Government Services.

#### *Finance and Administration Section*

While providing administrative support and financial management services to the Department, this section also administered the federal Heating Fuel Subsidy Program. Many northern residents outside Yellowknife applied for and received a rebate on their fuel costs. This rebate went to homeowners and tenants who paid more per gallon for their fuel than did their counterparts in Yellowknife. The per gallon subsidy was paid on a maximum of 1,500 gallons a year per household.

#### *Office Services Group*

The Office Services Group is responsible for internal and external communications of the N.W.T. government.

#### *Systems and Computer Services Division*

The Systems and Computer Services Division is responsible for developing, maintaining and operating the Government's computer systems.

A three-year computer plan was developed that determined the Government's needs for information and the personnel and computer hardware necessary to meet those needs. According to the plan, a new building housing upgraded equipment will replace the Government's present computer facility.

#### *Supply Services Division*

The Division's Purchasing Section is responsible for acquiring all goods the government needs for operating its programs. The Distribution Section maintains inventories of these goods and provides certain transportation services.

The Department is working to computerize its inventory and traffic management systems, in order to reduce costs and raise efficiency in both these areas.

#### *Energy Conservation Division*

The Division's main function is to manage the Federal/Territorial Energy Conservation and Renewable Energy Demonstration Program. Regional administration is carried out in Frobisher Bay and, in the future, this Program may also be administered in other regions. A number of requests for information and assistance have been received. Nine projects have been funded. Energy conservation projects include retrofitting houses in Pangnirtung, recovering heat from the refrigeration unit in a major shopping center in Yellowknife, building a "wood gasification" and heat plant in Fort Providence and developing a passive solar/forced air hybrid house in Fort Smith. The Division also staged an Energy Week Demonstration in Frobisher Bay.

The Division purchased an infrared thermography unit to measure heat loss from buildings. This equipment has been in great demand and has been used extensively in the Baffin and Keewatin Regions.



Alvin Kanak works with Jumbo drill, Nanisivik.

#### *Petroleum Products Division*

During 1981, existing facilities for storing and dispensing petroleum products were improved and made more safe. Improvements included illuminating "tank farms" and replacing dangerous ladders with proper cat walks and spiral staircases. Aviation refueling facilities are being installed at Holman Island and Sachs Harbour in response to the aviation industry's need for turbine fuel.

Decentralization of storage and distribution facilities for petroleum products continued during 1981. Regional offices assumed more responsibilities, such as co-ordinating resupply, negotiating contracts for distributing fuel and administering their operating budgets.

#### **Department of Local Government**

Co-operation and discussion with native organizations have been departmental priorities which have brought the Territorial Government's objectives for political and constitutional change closer to the form of government envisioned by the native population of the N.W.T.

The Minister of Local Government, James Wah-Shee, participated in many community and regional meetings to discuss how people might have more control over their local affairs. Such meetings took place at Fort Good Hope in January, Rankin Inlet in March, Wrigley in August and Inuvik and Snare Lake in September.

One topic discussed at most of these meetings was the proposed Community Government Ordinance. This draft Ordinance was the basis of discussions about the wide range of responsibilities that communities might want to assume in managing their affairs.

#### *Municipal Affairs*

Under the Homeowner's Tax Rebate Program, resident owners living in a city, town or village received a rebate on their municipal taxes from the Government of the N.W.T. The Program provided for a 50 per cent rebate of taxes up to a maximum of \$200 in any given taxation year. In areas where the rate of taxation is low, the rebate provided is 50 per cent of the taxes to a maximum of \$50 in any given taxation year.

The incorporation of the communities of Gjoa Haven, Spence Bay, Coppermine and Norman Wells as hamlets brought to 24 the number of hamlets in the N.W.T. Including the seven tax-based municipalities of Yellowknife, Hay River, Fort Smith, Fort Simpson, Inuvik, Pine Point and Frobisher Bay, there were 31 incorporated municipalities in the N.W.T. In addition, there were 24 organized settlements with locally elected councils that acted in an advisory capacity on municipal matters. In the hamlets and settlements, approximately 90% of the administrative staff and council members were Inuit, Indian or Métis.

The Property Assessment and Taxation Program continued to expand and an additional 12 communities in the Baffin and Keewatin regions were added to the roll in 1981.

Debenture loans were issued to certain tax-based municipalities to finance capital projects such as road paving, sidewalk construction, fire engines and fire halls.

Most of these municipalities have developed three-to-five-year capital plans so that the impact of debenture loan payments on local taxation can be scheduled to coincide with assessment growth and other revenue factors.

#### *Town Planning, Lands, Water and Sanitation*

Community plans were initiated or prepared with the communities of Lake Harbour, Pangnirtung, Pond Inlet, Sanikiluaq, Chesterfield Inlet, Coral Harbour, Repulse Bay, Fort Liard, Fort Smith, Hay River, Jean Marie River, Lac la Martre, Pine Point, Snowdrift, Yellowknife, Fort Norman, Inuvik and Coppermine. A major three-year study was begun to define a new planning ordinance that will provide the legal framework for all northern planning.

Legal Surveys were carried out in Pangnirtung, Cape Dorset, Lake Harbour, Frobisher Bay, Whale Cove, Baker Lake, Fort Rae, Cambridge Bay, Coppermine, Tuktoyaktuk and Norman Wells. Aerial photographs were taken of most Western Arctic communities.

Land assembly projects were completed in Cape Dorset, Lake Harbour, Rae, Tuktoyaktuk and Coppermine. Site development, land development and road construction projects were sponsored in most N.W.T. communities.

A new land valuation policy was implemented to encourage home ownership and to reflect development costs in land prices.

The Water and Sanitation Program provided for approximately \$10 million worth of capital improvements to water, sewage and garbage facilities in approximately 30 communities. Major water supply projects were started in Fort Franklin, Fort McPherson, Fort Simpson, Pine Point, Tuktoyaktuk and Yellowknife. Construction of sewage facilities was undertaken in Baker Lake, Fort Norman, Inuvik, Rae-Edzo and Yellowknife.

A grant system was initiated to provide financial assistance to homeowners to install a piped sewer service connection where community conversion to such piped services is economically feasible.

#### *Development and Training*

The Development and Training Division helps communities to develop democratic, responsive governments, and encourages community-wide understanding of local responsibilities. The Division works with elected and appointed local officials by providing advice, running conferences and operating training workshops at the community, regional and territorial levels.

Much of the Division's work was concentrated in Norman Wells and the Central Arctic settlements of Coppermine, Gjoa Haven and Spence Bay, which attained hamlet status. Preparatory work was also begun in Cape Dorset and Lake Harbour to help these communities to achieve their goal of attaining hamlet status in 1982.

The first certificates at the intermediate and university level were issued under the new certification program in Municipal Administration. This course, developed by the Division's Training Section, deals with municipal management, financial administration and local government theory specific to the N.W.T. Seventeen people obtained intermediate certificates issued after they had completed the first course offered at Edzo in January 1981. Another seven people completed the university course and earned certificates.

#### *Airports*

The joint Territorial/Federal program to improve airports and aviation support services at 38 communities in the N.W.T. progressed according to schedule. On completion of the program in approximately five years, airports in most N.W.T. communities with populations of over 100 will have improved runways, air terminal buildings, navigational aids, airfield lighting, weather and communication equipment and equipment for airfield maintenance and emergency services.

In 1981, major airport construction projects resulted in expenditures of more than \$12 million, bringing the total expenditures of program since its inception to nearly \$50 million. Runway construction was completed at Fort Liard, Rankin Inlet, Fort Norman, Aklavik, Sachs Harbour and Igloodik. Terminal buildings were started at Spence Bay and Repulse Bay and improved lighting systems installed at Spence Bay, Whale Cove, Lake Harbour, Cape Dorset, Pond Inlet, Sanikiluaq and Broughton Island.

When each community airport has been completed, hamlet and settlement councils hire trained local people to operate and maintain the airports and to provide weather observance and communication services. In 1981, approximately \$3.5 million was spent on operating and maintaining community airports in the Northwest Territories.

On April 1, 1981, the Territorial Government assumed responsibility for training all airport staff. By providing three formal courses, the government trained 19 northerners in weather observation and communication skills. Regional workshops provided additional training for 16 airport maintenance personnel. In 1981, there were more than 50 full-time community council employees working at 24 community airports.

#### *Recreation*

The Executive Committee approved a new recreation facilities policy, which will be implemented in phases during 1982. A review of sports policy for the Territories was begun, and a similar review of community recreation policy will soon be undertaken.

The Northern Games Association was decentralized with separate games held in Fort McPherson, Coppermine and Repulse Bay. Revitalized Dene Games were held in Rae-Edzo. Cultural contingents representing the N.W.T. performed at the Vancouver Canadian Heritage Festival and at the Canada Games.

Sport North and the Recreation Division sent 46 athletes (softball, swimming and track and field) to the Canada Summer Games. There was also extensive participation in the Arctic Winter Games held in Fairbanks, Alaska in March 1982.

#### **Aboriginal Rights and Constitutional Development**

As Minister responsible for overseeing the Territorial Government's input into native claims negotiations, James Wah-Shee provided direction to his staff in the Aboriginal Rights and Constitutional Development Secretariat. The Government has worked to ensure that its native claims inputs represent the views of the general public and that it articulates the aspirations of native groups.

A major concern of the Secretariat has been to protect aboriginal rights as they are affected, for example, by the Canadian constitutional resolution. In March, the northern leaders' conference provided a forum for joint action on these issues.

Constitutional issues continued to be of utmost importance. The discussion paper "Our Land, Our Future" was distributed across the N.W.T. in November to solicit the views and suggestions of the general public about the future political and constitutional development of the Territories.

In keeping with its commitment to work with people to develop regional forms of government in response to initiatives from communities, the Government of the N.W.T., represented by the Secretariat, is studying the development of a Western Arctic regional government as suggested in the COPE proposal.

## Information

The Department of Information is responsible for providing information to residents of the Northwest Territories and other parts of Canada about the programs, services and activities of the Government of the Northwest Territories. It provides central public relations, printing, graphic design, advertising and interpreting services to the government.

During 1981, the Department of Information gave special emphasis to improving the government's ability to communicate in native languages. The Department particularly stressed the extension of the Dene language service.

### *Northern Communications Program*

In 1981, six communities (Sachs Harbour, Lac La Martre, Repulse Bay, Lake Harbour, Broughton Island and Clyde River) received regional radio and television service through the Department's Northern Communications Program which began in 1978. Sixteen communities now have these services.

The program provides equipment that enables communities to receive CBC network television and CBC regional radio services.

Sachs Harbour was the first community having fewer than 250 residents to receive radio and television service. Originally, the program was intended to supply equipment to communities with a population of between 250 and 500. However, the Executive Committee, acting on a recommendation of the Legislative Assembly, lowered the population "floor" to 150.

The four remaining communities in the N.W.T. having between 150 and 250 residents (Whale Cove, Paulatuk, Wrigley and Rae Lakes) are scheduled to receive the service in 1982.

The Department of Information also encourages the development of local radio stations in two ways. First, community radio societies purchase their own studio equipment and can connect to the radio transmitter installed by the Department. This enables them to provide local programming, usually in the native languages. To date, this arrangement has been followed in 13 of the 16 installations. to date.

The Department also has a community radio grant program to assist local radio stations to meet operating costs.

### *Public Affairs Division*

The Public Affairs Division continued working toward building a full-service audio-visual unit. The Division also started the development of a system for producing all audio-visual materials in Dene languages.

The audio-visual unit has a staff experienced in planning, budgeting and producing 16 mm films. Projects ranged from helping a native communications group to produce an experimental animated film to filming a 20-minute presentation on the Bathurst caribou herd for the government's wildlife service.

The audio-visual unit also assisted the Native Communications Society of the Western Arctic (NCS) to produce a cultural historic film in the Nahanni area by providing a cinematographer.

A film seminar was co-sponsored and financed with CBC for independent filmmakers in the North.

Other division staff began researching the feasibility of translation into the Slavey, Loucheux, Chipewyan and Dogrib languages. They also compiled lists of potential freelance translators. Projects were completed for program departments in which the materials were produced in these languages, as well as in English and Inuktitut. During 1981, public affairs officers prepared about 31 press releases and 100 public service announcements for CBC northern television.

Longer-term public relations and communications plans were developed for the health, social services and economic development and tourism departments, a process which should expand to other areas of the Government.

Finally, the Public Affairs Division continued to provide assistance to native communications groups. For example, the Division helped the Native Communications Society and the Inuit Tapirisat of Canada to hold a seminar on newspaper, radio, film and public relations techniques. The Department also provided financial assistance to the Native Communications Society that enabled it to hold a workshop designed to improve production and management capabilities of community radio stations.

### *Publications and Production Division*

The Dene and Inuit Traditional Life Series, produced by the Publications and Production Division in 1981, was one of the most successful projects. The Series consists of separate packages of 24 collectors' quality archival prints on both the Dene and Inuit people of the Northwest Territories. Each package includes an illustrated booklet on the history of the people. The Series is being marketed by outlets throughout the North and in southern Canada by the Hudson's Bay Company.

The Division worked extensively for the Department of Local Government on a publication detailing water and sanitation facilities in the Northwest Territories. It produced a prototype publication of the town plan for Baker Lake. The effectiveness of the publication at the community level will be reviewed and a new series of community town plans published in a standard format.

The territorial printer announced the release of two new legislative publications in December 1981. The 1979-80 annual volume of ordinances, and the 1980 revised regulations will go on sale early in 1982. A new publication called "Legislative Summary" will be published on a regular basis after each session of the Legislative Assembly. The booklet will summarize the issues debated, any new legislation and amendments made to existing legislation.

### *Interpreter-Translator Corps*

The N.W.T. Interpreter Corps continued to provide language services for all departments of the Territorial Government. The Corps also provided these services to all levels of Territorial courts, the federal government and other agencies and organizations as time permitted.

Formed in 1973, the Corps was established to aid communications between English-speaking and native language residents of the Northwest Territories.

The language of the Inuit, Inuktitut, is written in syllabic form and thus cannot be handled in a word processing system based upon the Roman alphabet. Accordingly, computer software modifications are being made to enable the word processing system to store, retrieve and edit syllabic material and to print out in syllabic form. Further research to examine the feasibility of machine translation from English to Inuktitut is underway.

During 1982-83, the Department will be examining the possibility of developing a micro-computer network that will link its regional offices in Frobisher Bay, Rankin Inlet and Cambridge Bay with its headquarters staff.

#### **Department of Personnel**

This Department is responsible for planning and co-ordinating personnel management within the public service of the Government of the Northwest Territories. These activities include such functions as staffing, employee housing, administrative policy development, employee relations, employee benefits, classification and compensation and staff training programs.

Of the 1,059 staff hired in 1981, a total of 890 were hired from the North, while 169 were from outside the Territories. These figures compare with a total of 932 staff hired from the North in 1980. In addition, 270 teaching positions were filled. Eighty-seven of the positions filled in 1981 were transfers and 206 were promotions.

A program of student summer employment resulted in about 170 students being hired.

Native employment reached a level of 37 per cent of the total number of positions filled.

#### **Administrative Policies**

By implementing most of the major recommendations of the 1979 task force on housing, the Government of the Northwest Territories took a major step away from the existing policy of providing accommodation for its employees.

Employees in centres located on a highway system will now pay rent according to market conditions. The Government will provide new employees with accommodation for a period of only one year. The sale of surplus government accommodation to employees and eventually to the public is planned for 1983.

#### **Department of Public Works**

The Department is responsible for designing, building, operating and maintaining all works required by the Government of the N.W.T. Departmental responsibility extends to the operation of ferries, vehicles, heavy construction equipment, and the maintenance and reconstruction of roads and highways.

Improving the energy efficiency of buildings and works continues to be a departmental priority, since approximately \$26 million of the operations and maintenance budget was spent for utilities. Increased energy efficiency is an important aspect of new design and construction, and the Department has a major program for retrofitting and upgrading energy standards of existing systems.

#### **Contracts**

A new minor works contract form has been instituted for projects of less than \$100,000 in value. The elimination of bonding for these projects has helped small contractors in the N.W.T. compete for contracts and has improved contract administration process. A new maintenance contract form is currently being drawn up for use in the regions and at headquarters.

The northern preference policy has been changed to include all northern sub-trade contractors in addition to northern general contractors. It provides a preference range of 5 or 10 per cent of the contract value to the northern contractor.

The Department has increased the number of N.W.T. contractors and the proportion of local labour used for construction projects.

#### **Operations**

Insulation was upgraded in many buildings and mechanical services have been modernized. The Department has introduced low-energy appliances, and high-efficiency electric motors. Motorized fuel dampers have been introduced and high efficiency fuel furnaces and heaters have been installed. The use of waste heat from Northern Canada Power Commission generators to heat government buildings has continued. These energy conservation efforts have yielded more than \$400 000 in savings.

The Department has accelerated the Accommodation Services Program, which is aimed at reducing the number of government-owned houses in areas where housing markets exist.

An additional 120 vehicles of various types, worth \$3 million, were delivered to communities. These vehicles either replaced obsolete units or added to the number of municipal services vehicles. Five communities received modern fire trucks.

In total, the Department of Public Works is responsible for operating and maintaining some 550 000 square metres of buildings and 1,200 pieces of mobile equipment, as well as municipal works and petroleum storage "tank farms" across the N.W.T.

#### **Architecture**

Major school construction projects include continuation of the Maani Ulujuk Elementary and Junior High School, Rankin Inlet and completion of the Mezzanine area of the Keketak Ilinavvik School, Gjoa Haven. The Rankin Inlet School, started during the summer of 1980, is scheduled for completion in early 1982. It will replace temporary classrooms constructed after the former school building had been destroyed by fire.

Planning is underway for new schools in Lac La Martre and Norman Wells and for a major addition to the school in Clyde River. Breynt Hall, the Adult Vocational Training Centre student residence at Fort Smith was recently damaged by fire. Work is underway to repair this building. Plans are complete for major renovations to Akaitcho Hall in Yellowknife. A community services building containing community offices, post office, radio station, and recreation space is under construction in Pelly Bay.

### *Engineering Division*

The largest project carried out by the Division in 1981 was the design and construction of a new 20 000 000 gallon reservoir for Tuktoyaktuk. This is being built using 500 000 cubic metres of sand dredged from Tuktoyaktuk Bay as basic building material. The reservoir was shaped in 1981. The liner will be installed and the reservoir filled in 1982.

Major water supply works are underway in Fort Simpson, Rae-Edzo, Fort McPherson, Rankin Inlet and Frobisher Bay. In Frobisher Bay, work is being done to improve the usefulness of the system in winter.

The Division is improving the sewage systems in several communities. It has acquired a portable video camera which can be passed through finished sewer lines to find blockages and reveal faults. In Pangnirtung, a new incinerator was ready for operation at the end of the year. Work has started on disposal areas for both sewage and solid wastes in Baker Lake.

The high temperature hot water heating system in Frobisher Bay is being extended to heat 35 new houses being constructed by Public Works Canada. New heating equipment is being installed in a number of other Frobisher buildings.

New "tank farms" were constructed in Fort Franklin and Paulatuk. A major rebuild of the facilities of Gjoa Haven is underway, and a new tank for aviation fuel is being built in Coppermine. The major five-year program of tank farm improvement in Baffin Island is now complete. The new tank farms built in Coral Harbour and Whale Cove last year have been accepted from the contractors.

### *Highways Division*

Prolonged dry weather presented difficulties in keeping the gravelled highways in the South Mackenzie area in good condition for driving. Forest fire emergencies have hampered regular maintenance work, since highway crews were diverted to controlling traffic and escorting convoys traversing the danger zones.

The Department analyzed the previous contractual arrangements for maintaining the Mackenzie Highway extension to Fort Simpson. As a result of the review, the Department subsequently arranged for smaller contracts covering shorter stretches of road. Maintenance contracts were arranged with a local contractor in Fort Simpson and the Indian Band group called Nogha Enterprises. A similar maintenance arrangement will likely be arranged for the Liard Highway after it has been completed by the federal government.

Low water levels impeded ferry operations, particularly at the Yellowknife Highway crossing of the Mackenzie River. The Department had to impose weight restrictions for the ferry at the location, as well as for the ferry at the Liard River. A new cable ferry for the Peel River crossing on the Dempster Highway was commissioned in September.

Projects for the Department of Local Government were undertaken in various regions. Projects included street construction, site development landfill and drainage surveys. In the Baffin Region, specifications were written for a special aggregate-screening plant that can be airlifted in a Hercules aircraft, and for the design and construction of a steel bridge for Pangnirtung.

The road between the town of Inuvik and the airport was surfaced with asphalt pavement. This 10 km stretch of highway will be watched with interest over the next several years to determine whether or not this kind of road surface is suitable for other communities having similar environmental conditions.

### **Northwest Territories Housing Corporation**

The N.W.T. Housing Corporation is responsible for developing, managing and maintaining social (subsidized) housing programs for the Northwest Territories in order to provide adequate accommodation for all N.W.T. residents.

The Corporation's programs and activities are directed toward people and housing. A summary objective of its programs is to meet the housing goals as determined at the community level.

The Corporation's capital budget for 1981 was slightly over \$25 million. Of this amount, the Canada Mortgage and Housing Corporation (CMHC) funded 75.5 per cent. The Government of the Northwest Territories funded the remainder.

The Corporation's operations and maintenance budget for 1981 totalled more than \$35 million, with 24.1 per cent from CMHC and 52.6 per cent from the Government of the Northwest Territories. Non-cash items contributed 12.9 per cent and the collection of rent 10.4 per cent.

In addition to providing subsidized housing, the Housing Corporation offers a range of other housing programs. Interest in home ownership increased markedly in 1981 and the Small Settlement Home Assistance Grant Program (SSHAG) continued to gain in popularity. This is a self-help program, which required the would-be homeowner to contribute his or her labour as equity. The corporation grant of \$15,000 is now supplemented by an additional \$3,000 to assist with such costs as freight on logs, tools and equipment.

A Rural and Remote Housing Program is offered by the Housing Corporation in partnership with CMHC. This Program allows lower income families an opportunity to own their own homes at mortgage rates geared to income.

Exchanging ideas has proven valuable to the development and implementation of the Corporation's programs. To foster this exchange, the Corporation held two major housing conferences in 1981. One was held in the western Arctic and the other in the south Mackenzie region. The Corporation and CMHC shared the cost of these conferences, and all agencies involved in housing were encouraged to participate.

The Corporation also carried out many training activities. It held nine training workshops for housing associations across the Territories in 1981. These workshops usually ran for three to five days and focused on the various programs that the Corporation offers. The Corporation's policies and the procedures involved in implementing its housing programs successfully were explained at these sessions.

A construction training program, successfully implemented in Pangnirtung and Frobisher Bay, was expanded to the communities of Hall Beach, Igloodik and Clyde River. Forty trainee carpenters are learning the necessary skills to enable them to build corporation housing.

Contractor training has also been introduced in the communities of Coral Harbour, Whale Cove, Arctic Bay and Baker Lake in co-operation with the Department of Economic Development and Tourism. This program will enable local contractors to compete more effectively within the construction industry.

The Housing Corporation maintains and manages over 4 000 rental units across the Territories, including 10 housing projects for senior citizens. A number of other programs, such as the Extra-ordinary Maintenance Program, ensure the upkeep of these units. During 1981, \$1.2 million was spent on maintaining 800 rental units.

Activities in the construction field centered on two important areas during 1981: rehabilitating existing homes and building new ones. Rehabilitation became a focal point because of rising operating and maintenance costs. In total, 132 units were rehabilitated, incorporating improvements such as upgraded insulation, energy-efficient doors and windows and modern plumbing and electrical fixtures.

In new construction, a total of 94 public housing family units and 30 Territorial government staff units were built in various communities. Other new construction projects included four, single-person fourplexes, three warehouses and a duplex. All housing is now designed in conjunction with housing federations and, where feasible, with local communities.

**Liquor Control System and Liquor Licensing Board**

The Liquor Control System is responsible for purchasing, distributing and selling alcoholic beverages to the residents of the Northwest Territories through its liquor stores, agencies and licenced outlets. The System provides administrative services to the Liquor Licensing Board.

The Liquor Licensing Board was active in revising regulations to meet changing conditions and requirements. Several licences were suspended because of contraventions of the Liquor Ordinance.

Local option plebiscites are now mainly delegated to regional offices, with Liquor Control System personnel providing expertise when requested.

Either prohibition, rationing or restriction is currently in force in 25 communities, and some form of regulation is in process for several others.

**Workers' Compensation Board**

The Workers' Compensation Ordinance provides compensation for wages lost as a result of injury from work related accidents.

During 1981, the Board processed 2,550 new claims.

In 1980, the Board raised pensions payable to those now on pension. It granted supplementary pension increases in 1981 that would bring the benefits payable for all accidents that occurred prior to January 1, 1981 to the following levels: disability pensions based on a year's maximum assessable income of \$20,400; widow's pensions of \$561.00 per month; children's pensions of \$127.50 per month.

A task force was established to study the operations of the Workers' Compensation Board. It also looked at how workers' compensation could develop in the future within the Territories and reviewed how workers' compensation operate in other jurisdictions. The task force has submitted a report to the Board. Its recommendations affecting the worker and the employer will be considered in any changes in the Workers' Compensation Ordinance.

A merit rebate plan, which is a type of assessment rebate program for employers, finished the second year of a three-year test program. This program is designed to encourage safety and reduce injury costs. The effectiveness of this program will be considered after its third year of trial operation.

Summary of Direct Northern Expenditures (000's)	\$	%
Total Forecast 1981/82	399 307	100.0
<i>Expenditure by Northern Objective:</i>		
Quality of Life	233 241	58.4
Administration and Support	111 468	27.9
Economic Growth	33 857	8.5
Evolution of Government	9 196	2.3
Leisure and Recreation	5 179	1.3
Protection of the Environment	4 770	1.2
Social and Cultural Development	1 596	0.4

# Government of the Yukon Territory

## ***Responsibilities***

The Government administers the Yukon in accordance with the Yukon Act, Yukon Ordinances and applicable federal laws.

## **Executive Council Office**

### ***Responsibilities***

The Executive Council Office provides advice, research, and administrative support to the Executive Council (Cabinet), the Cabinet committees on Legislation and Finance and the Statutory Instruments Committee (created in 1981 to increase the involvement of government backbenchers). The Office also provides these services to two permanent advisory committees of deputy ministers — Internal Management and Economic and Social Planning — and to the office of the Government Leader and the office of the Commissioner. It also administers the program of Commissioner's Awards, presented to individuals for bravery or public service.

The Office of the Internal Auditor, which reports directly to the Government Leader, is included in the Office's budget. Information on changes in legislation and internal policies is provided to all Government of Yukon departments.

Road to Dawson winding into the wintery scene, Yukon. Photo by Pat Morrow, 1982.



## **Review of 1981-82**

Mr. Douglas Bell continued his two year term as Commissioner, appointed under the federal Yukon Act. The role of Commissioner is evolving toward that of a provincial Lieutenant-Governor, as the Executive Council moves toward full Cabinet responsibility.

In December, Mr. Bert Law of Whitehorse was appointed as Administrator to act on behalf of the Commissioner when he is absent from the Yukon.

On April 1, 1981, the Executive Council comprised four members: the Hon. C.W. (Chris) Pearson, president and Government Leader, who represents the riding of Whitehorse Riverdale North; the Hon. H.D. (Dan) Lang, Whitehorse Porter Creek East; the Hon. M.S. (Meg) McCall, Klondike; and the Hon. E.G. (Geoff) Lattin, Whitehorse North Centre.

On May 6, the appointment of Howard C. Tracey, representing Tatchun, brought the Executive Council back to its normal membership of five. Members' portfolios from then until year-end were:

**Mr. Pearson:** Executive Council Office; Finance; Public Service Commission; and Intergovernmental Relations.

**Mr. Lang:** Renewable Resources; Tourism and Economic Development.

**Mr. Lattin:** Highways and Public Works; Municipal and Community Affairs; Yukon Housing Corporation; Yukon Liquor Corporation.

**Mr. Tracey:** Justice; Government Services; Consumer and Corporate Affairs; Workers' Compensation Board.

**Mrs. McCall:** Education and Recreation; Health and Human Resources; Heritage and Cultural Resources.

The Executive Council held a public meeting in every Yukon community during the year. One meeting was also held on Herschel Island, a nineteenth century whaling station that is now surrounded by Beaufort Sea oil exploration.

Major legislation brought forward, and passed by the Legislative Assembly included a new Wildlife Ordinance, and a new Municipal Ordinance and financing system.

On March 30, 1982, An Act to Amend the Interpretation Ordinance was passed and given assent. Among other changes, all pieces of Yukon legislation are now designated as "Acts", rather than as "Ordinances", as they formerly were. This Act and several companion Acts give legal recognition to Yukon's recent constitutional development.

Major legislation under review at year-end included the Landlord and Tenant Act, the Workers' Compensation Act, and the Motor Vehicles Act.

## **Plans for 1982-83**

The major event of the year will be an election. It will provide Yukon voters with their first opportunity to evaluate the party and Cabinet system of government. The 1978 election was the first one fought on party lines. With changes in the role of Commissioner in October 1979, the Executive Council assumed full responsibility for policy decisions, and day-to-day direction and control of the Government's operations.

The priorities of the Executive Council continue to be Yukon Indian land claims, energy development and conservation, and the Yukon economy.

## **Department of Finance**

### **Responsibilities**

The Department of Finance's activities are directed toward ensuring that the financial resources of the Yukon Government are properly planned, used and controlled. It also works to ensure that money is spent according to the Government's priorities. The Department manages and controls the Yukon Consolidated Revenue Fund and assists all departments and agencies in financial matters. It provides financial advice and assistance to the Executive Council and presents the Main Estimates, Territorial Accounts and other financial information to the Legislative Assembly. Finally, the Department monitors the financial performance of departmental operations and is involved in developing financial policies, procedures and controls.

### **Financial Operations Branch**

The Financial Operations Branch keeps the financial records of the Government of the Yukon. It processes suppliers' accounts and the Government's payroll and prepares periodic financial statements including the Territorial Accounts. It collects and monitors taxes and revenues, handles banking and investments and administers the Home Owners' Grants Program.

### **Financial Management Branch**

The Financial Management Branch is responsible for fiscal relations with the federal government and for analyzing all expenditure proposals submitted to Cabinet. It co-ordinates the budget process, prepares the Main Estimates and monitors the financial performance of departments.

### **Administration Branch**

This Branch provides administrative and personnel services to the Department.

## **Review 1981-82**

The Department continued to emphasize providing direction and guidance in financial matters to departments and making better financial information available to the Executive Council. The Department continued to improve the Financial Management System and adopted a new computerized payroll system. This system is scheduled for implementation early in the 1982-83 fiscal year.

In the 1981 fall session of the Legislature, the 1982-83 Capital Main Estimates were tabled and passed. Accordingly, preliminary work could start on major projects over the winter months in order to publish tenders and start work as early as possible in the short construction season.

## **Plans for 1982-83**

The Department will continue to further improve and refine its accounting procedures and financial administration and control procedures. In addition, it will review the financial planning and budgeting process and begin work on program evaluation and developing a capital plan.

## Department of Education

### *Responsibilities*

The Department of education is responsible for five areas: Elementary-Secondary Education, Adult & Continuing Education, Recreation Services, Manpower Planning and the Women's Bureau.

### *Elementary-Secondary Education*

On March 31, 1982, 4 976 students were enrolled in 9 urban and 16 rural schools in Yukon.

A new school in Old Crow was started after fire destroyed the existing building in December 1981. This school's design is based on modular construction techniques. Units were built in Edmonton and trucked to Old Crow. Construction included a teachers' residence and a Wildlife Branch office. An addition to the Carmacks school was also completed.

The Department continued to introduce new programs and develop its curriculum. A new Language Arts program in the intermediate grades was introduced, which completed the revision of the Program from Grades one to seven. Alternative education programs were started in Dawson and Whitehorse, and French immersion was expanded to include Grade 1 in Whitehorse, and Kindergarten in Faro.

The Department followed the recommendations submitted by the Career and Vocational Education Committee; it emphasized career education and counselling and appointed a full-time career counselling co-ordinator. The program supporting the introduction of native languages, history, and culture continued to develop, and outdoor education programs were expanded.

The Seventh Annual Superintendent's Meeting and School Committee Conference was held in November. The sessions dealt with the "Changes in Education".

### *Resource Corps*

This program is funded through a Canada-Yukon agreement and has continued to provide employment and training opportunities to the unemployed and under-employed. Projects this year have included work on the Mayo Local Improvement District Compound, Carmacks Pool, Mayo Conservation Facilities, Dawson City Conservation Facilities and the construction of campground shelters in various communities.

### *Yukon Campus*

The Yukon Teacher Education Program changed its name and emphasis.

Programs were expanded to include a more diversified selection of courses so that students could pursue studies in fields other than Education. A study skills instructor was added and the use of local instructors was emphasized.

### *Adult & Continuing Education*

The Adult and Continuing Education Branch organizes programs of interest to adults covering vocational and technical training, industrial, academic and language training and diploma courses. These courses are offered through the Yukon Vocational and Technical Training Centre, the Apprenticeship and Industrial Training Section and other programs.

### *Yukon Vocational & Technical Training Centre*

The Yukon Vocational and Technical Training Centre offers pre-employment and diploma courses through three Divisions: Academic, Business, and Applied Arts; Trade & Industrial; and Extension Services. Ten-month pre-employment courses were offered in Automotive Mechanics, Carpentry and Woodworking, Heavy Equipment Mechanics, and Industrial Electricity. Five-month courses were conducted to train heavy equipment operators and linemen. One-month Journeyman upgrading courses were held in conjunction with the Apprenticeship & Industrial Training Section in the following trades: Painter & Decorator, Welder, Heavy Equipment Mechanic and Carpenter. A trade-oriented program for women was offered. The Academic, Business and Applied Arts Division spanned a broad range of programs. Academic upgrading in reading, writing, and mathematical skills were offered along with life skills, social studies, and basic science.

General Education Development training enabled individuals to obtain high school equivalency diplomas during the year. To supplement this training, a Voluntary Tutor Program for basic literacy was started in Whitehorse. Business Education courses provided training in three skill areas: accounting, clerical/typing and secretarial. The Centre introduced a two-year Business Administration Program, with two part-time courses offered this year. By the fall of 1982, this program will become a full-time course. The Certified Nursing Assistant's Diploma was provided through a five month theory course at the Vocational Centre and a five month practicum at the Whitehorse General Hospital. Food Services provided training in commercial and short-order cooking, as well as a one month course in outdoor camp cooking. Short courses were introduced in fur grading and trapping, data processing, basic wilderness survival, writing skills for new Canadians, and rigging and signalling for carpenters.

Community courses were offered through Extension Services. Community Learning Centres were established in Dawson, Carcross, and Watson Lake. Anik 'B' Satellite programs continued in Whitehorse, and additional pick-up stations were set up in Dawson and Faro. Arrangements are being made to extend the Anik 'B' programming to Watson Lake. A Mobile Training Unit fully equipped to provide courses in small engine repair was brought into service last year. It is used to deliver training to both in-school youth and out-of-school adults. To date, the small engine repair course has been taught in four rural communities.

### *Apprenticeship & Industrial Training Section*

The Apprenticeship & Industrial Training Section is responsible for Apprenticeship Training, Trades Certification, and Industrial/Commercial on-the-job training. The Section also registers apprentices and makes arrangements for them to receive in-school technical training. In the past, all such training took place in one of the neighbouring provinces. However, during the past year, levels III and IV Carpentry were offered through the Yukon Vocational & Technical Training Centre in Whitehorse.

Industry is showing increasing interest in apprenticeship training, which has resulted in a significant increase in the number of apprentices. Training has been expanded to include the trades of Painter & Decorator, Welder, Partsman, Power Lineman, and Instrument Mechanic. Journeyman upgrading courses co-ordinated by the Section, and delivered by the Vocational Centre, were offered in the trades of Carpenter, Welder, Heavy Equipment Mechanic, and Painter & Decorator. Courses in Welder Practical and Oil Burner Mechanic are expected to be given next year.

Industrial training was offered through the Canada Manpower Industrial Training Program (CMITP) and the Critical Trades Skill Training Program (CTST). Under the Adult Occupational Training Agreement, the Apprenticeship and Industrial Training Section and the Canada Employment Centre determine priorities for employer-centered training. They provide Yukon employers with expertise and assistance in developing training plans, and monitor the quality and technical aspects of the training. The Adult & Continuing Education Branch has been involved in planning for a Yukon College. The preliminary schematic drawings for Phase I of the College were completed this year.

#### *Recreation Services*

The Recreation Branch is responsible for providing community recreation services and assisting recreational, sports and artistic organizations and events in the Yukon.

#### *Community Recreation Services*

Two Community Recreation Consultants work with community councils, recreation boards and organizations to assist with local recreation programs and services. The Consultants provide information and training and development to support community recreation programs. The concepts of setting goals and comprehensive planning have been and will continue to be stressed this year in the various community and regional workshops.

Each Recreation Board is eligible to receive a Recreation Assistance Program Grant. This Grant may be used to fund the local Recreation Board's programs, or the Board may give the money to local groups so that they can run their own. The grant remains a valuable source of recreation funds for all eligible Yukon communities.

In 1981-82, five communities were involved in the summer Pool Program sponsored by the Recreation Branch. Plans to transfer responsibility for this Program to local authorities are being initiated for 1982-83. If communities accept this responsibility, the Recreation Branch will provide only technical and financial support.

Most Annual Recreation Boards sent delegates to the Fourth Annual Recreation Board Members Seminar, which called for a major review of Recreation Branch programs. The review has begun, and the Branch is looking for input from communities, as well as from recreation, sports and arts groups, associations, and individuals. This review, a priority for 1982-83, will shape new directions for Yukon recreation in the 1980's.

#### *Territorial Recreation Services*

The Yukon Sports Federation and the Yukon Arts Council provided administrative and program support to the Territory's sport governing bodies and arts organizations respectively. These federations receive funding from the Recreation Branch.

*Sport:* In 1981-82, eighteen territorial sport associations received funding from the Recreation Branch for administration purposes, leadership development, travel, and special projects. It is the responsibility of the Community Recreation Consultant in charge of sport to monitor and administer this funding. The Branch provides assistance in planning and an information service.

Other responsibilities of the Recreation Branch are to implement the theory portion of the National Coaching Certification Program and to promote all technical coaching clinics planned by Yukon Sports Associations. Three Level I Theory Clinics were held throughout the Territory in 1981-82. In 1982-83, more people will be trained to conduct clinics in order that demand for the coaching theory program can be met. In 1981-82, twenty technical coaching clinics were conducted through Sport Associations in Yukon.

*Games:* Only one Yukon athlete was sent to the 1981 Canada Summer Games. However, more than 300 athletes participated in the Arctic Winter Games. These bi-annual trans-north games are held in Fairbanks. The Yukon Sports Federation was under contract to select and prepare Yukon's team.

*Arts:* The Recreation Branch was again active in developing the Arts in Yukon. It hosted a "Yukon Contact" — providing an opportunity for performing artists to display their talent and community sponsors to meet and discuss performance plans. The panel exhibition of children's artwork in the foyer of the Government Building was a popular attraction throughout the year. Schools were once again provided with performing arts workshops and the "Artist in the School" program. The Recreation Branch assisted Yukon's professional artists by providing information on funding, national contacts, and interprovincial projects. This type of information was also provided to local groups and organizations.

Besides providing financial assistance to the Yukon Arts Council, the Recreation Branch assisted the Council's "Performing Arts on Tour" Program, visual arts workshops and multiculturalism programs. It also assisted the Council in its planning for the future. The Branch produced an Arts Funding Index and directories of touring and visual artists for the use of the Council and its members. The Recreation Branch also participated in several national arts projects including the cultural program of Jeux Canada Games and the Yukon segment of the Canadian Heritage Festival. The Branch also helped to co-ordinate the Federal Cultural Policy Review Committee meetings in June of 1981. Finally, the Branch will continue its present work in the arts for 1982-83, while planning the future directions for the Arts in Yukon.

On January 1, 1982, responsibility for Manpower Planning was returned to the Department of Education. Since June, 1979, responsibility for this area had rested with the Manpower & Labour Branch, Department of Consumer & Corporate Affairs.

This re-organization followed a review of Adult & Continuing Education, Manpower and Labour related functions in the Government of Yukon. Activities during the fiscal year included preparing reports on Women in the Yukon Labour Market, Indian People and the Yukon Labour Market and preparing a manpower perspective on Yukon's tourism industry, northern mega projects and manpower delivery services. The Branch completed background papers for the Internal Review Committee on Manpower & Labour and determined the research requirements in connection with the Beaufort Sea and McMillan Pass developments. It also carried out a manpower forecasting project in conjunction with the Yukon Labour Force Development Council.

*Policy and Planning Initiatives:* Papers were prepared on employment, training and manpower delivery issues relative to the Beaufort Sea. Proposals for new comprehensive development agreements were prepared, as were materials for negotiating a new Canada-Yukon Adult Occupational Training Agreement.

#### *Program Planning*

The Branch developed the Yukon Pipeline Employment Training Plan in co-operation with Adult & Continuing Education and the Department of Intergovernmental Relations. The Plan was then presented to the Yukon Advisory Council, the joint Federal-Territorial Manpower Needs Committee and others.

#### *Evaluation Activities*

The Branch continued to represent the Government of Yukon on federal job creation review boards for the Local Employment Assistance Program, Canada Community Services, Canada Community Development and Summer Student Programs.

#### *Industry-Labour-Government-Native Consultations*

The Branch continued to provide secretariat and research services to the Yukon Labour Force Development Council. Yukon industry, labour organizations, the Government of Yukon, the Council for Yukon Indians and federal government agencies were represented on the Council.

Certain problems arose, however, that the Council felt it could not resolve. For example, Yukon labour organizations indicated their dissatisfaction with some employers and questioned their sincerity about developing the local labour market. Accordingly, the Council, after a mail ballot, voted to disband. The Council Chairman was Mr. James Smith, Chairman of the Northern Canada Power Commission. Other means will be pursued to involve industry, labour, government and native representatives in joint planning and discussions on issues relating to the labour market.

#### *Interprovincial & Federal-Provincial Activity*

The Branch was active in the Western and Northern Ministerial Advisory Teams on Manpower Planning and Manpower Training and Immigration. The Branch supported senior officials participating in Ministerial level conferences and continued to provide secretariat services to the joint Canada-Yukon Manpower Needs Committee and the Manpower Training Needs and Research Committee.

#### *Women's Bureau*

The Women's Bureau is responsible for recommending new policies in the Yukon to improve the status of women. The Bureau was transferred from the Department of Consumer & Corporate Affairs on January 1, 1982. The Women's Bureau was involved in planning Human Rights policy and represented the Government of the Yukon in the Canadian Association of Statutory Human Rights Agencies. The Co-ordinator is a member of the CAALL Sub-Committee, "Women in Employment", and represents Government of Yukon at Federal-Provincial-Territorial Status of Women meetings. The Women's Bureau started a new course for single-parent women who receive social assistance. The course was offered this year at the Yukon Vocational and Technical Training Centre. Planning was underway to establish a ministerial Yukon Advisory Council on Women's Issues.

#### *Plans for 1982-83*

During the coming year, the Department plans to complete the new Porter Creek Junior High School. In addition, the reconstruction of the Old Crow School will be completed. Grade offerings in Old Crow will be expanded to Grade 10. A new school will also be built at Pelly Crossing. Work has already begun on this project. The Recreation Branch will have a recreation plan for the 1980's once the Recreation Delivery System has been reviewed.

The Adult and Continuing Education Branch and the Manpower Branch have a number of plans for 1982-83. A system will be developed to determine the ability of employers to deliver industry-based training. In addition, a system will be developed for gathering more accurate information about the supply of manpower and forecasting manpower demands. The Department will refine the Yukon Pipeline Employment Training plan and will expand the delivery of general mobile training courses to unserved communities. A number of Resource Corps projects are planned. More Community Learning Centres will be established and the knowledge network Services will be expanded.

Finally, a two-year Business Administration program will begin in September and women's programming will continue and will stress vocational and career development.

#### **Department of Tourism and Economic Development**

##### *Responsibilities*

The Department of Tourism and Economic Development has three major areas of responsibility. First, it is responsible for co-ordinating the development and implementation of short, medium and long-term economic development strategies, plans and programs for the Yukon. The Department's second responsibility area is to carry out research in order to develop a comprehensive socio-economic data base adequate to meet the needs of all Yukon Government departments and the public. Finally, the Department is responsible for developing the potential of the Yukon tourism industry to the greatest extent possible by managing and administering an effective tourism marketing and development program.



Interior of Super Value store with food displays and shoppers at Qualin Mall, Whitehorse, Y.T. Photo by Pat Morrow, 1982.

*Special Programs Branch*

**Responsibilities**

The Special Programs Branch is responsible for developing, managing and implementing the Government's economic development and energy programs. The Branch currently operates three programs through cost sharing agreements with Canada, namely the Special Agriculture and Rural Development Agreement (Special ARDA), the Conservation and Renewable Energy Demonstration Agreement (CREDA) and the Yukon Energy Conservation Incentive Program Agreement (ECIP). The Branch is also responsible for developing energy plans and policies for Yukon.

**Review 1981-82**

During 1981-82, the Special ARDA program was particularly active. During the year, 44 projects were approved with a total grant contribution of more than \$1.9 million. Of these projects, 24 were commercial undertakings and accounted for \$1 million of the grants. The remaining 20 projects were for primary producing and social adjustment activities and were carried out and funded through the Government of the Yukon.

Under the Conservation and Renewable Energy Demonstration Program, six projects with a total grant contribution of \$127 000 were approved during the year.

The Energy Conservation Incentive Program was also active with 31 energy audits performed to the beginning of March 1982. Total first-year potential savings of \$299 240 were identified. The cost of implementing the audit recommendations would be about \$804 000. Total incentive grants approved were \$258 000.

The Branch was also actively involved in developing an energy policy for Yukon and participated on the intergovernmental task force to develop a Northern Energy Strategy.

**Plans for 1982-83**

The Special ARDA Agreement expires March 31, 1982, and negotiations are underway to renew and revise the programs associated with it. The two energy programs will continue with possible modifications or improvements pending discussions with Energy, Mines and Resources, Canada. Work on developing a Yukon Energy Policy will continue.

The Branch will be responsible for the implementation of the Small Business Loans Fund Program.

*Tourism Marketing Branch*

**Responsibilities**

The major responsibility of the Tourism Marketing Branch is to promote the Yukon as an internationally recognized tourist area.

**Review 1981-82**

The 1981 tourism industry in the Yukon was much improved over previous years. Border crossings, a major indicator of the number of visitors, were 14 per cent higher in 1981 than in 1980. During the 1981 calendar year 386 000 people entered the Yukon. It is estimated that visitors to the Yukon spent more than \$51 million in 1981. Highway traffic increased markedly. Air traffic was slightly higher than it was in 1980. Trans-border rail traffic on the White Pass Route reversed its earlier decline, rising 6 per cent over the 1980 level.

Attendance at visitor attractions and information centres reflected the increase in the number of tourists. The number of visitors to the information centre at Dawson City remained unchanged from 1980 to 1981. However, the centres at Haines Junction and Watson Lake reported sharp increases. Registrations totalling 111,101 were up almost 24 per cent from 1980. Since 1975, the number of visitors from the United States has been declining. However, the number of visitors from Southern Canada and overseas is growing steadily. In 1981, 62.9 per cent of visitors to Yukon came from the United States; 28.2 per cent came from Southern Canada and 8.8 per cent from overseas.

The Canadian Government Office of Tourism offered significant support to Tourism Yukon. It provided marketplaces for retail travel agents and financial assistance for visiting media, tour wholesalers and travel agents. It also offered general marketing assistance. A total of 118 retail travel agents and tour operators participated in familiarization tours of Yukon. More than 40 writers, photographers and broadcasters visited Yukon to gather material to publicize the Territory in Canada, United States, Australia, France, Germany, and England. The co-operative marketing program with the State of Alaska has continued to allow the Marketing Branch to maximize exposure of Yukon's attractions, facilities and services at a minimum cost.

#### **Plans for 1982-83**

Marketing projects will be continued in co-operation with the Yukon Visitors Association, the Canadian Government of Tourism and the State of Alaska.

#### **Economic Research and Planning**

##### **Responsibilities**

The Economic Research and Planning Branch, (ERP) carries out research, and develops plans and policies on all matters pertaining to the economic development of Yukon. In addition, the Branch provides a statistical information service and a research library for the Government, the private sector and the public.

The main areas of the Branch's responsibility are non-renewable resources, transportation, business development, and energy. Specifically, ERP is involved in activities such as planning for major developments that will affect Yukon (e.g., Beaufort Sea oil and gas developments and the mining activities in MacMillan Pass); preparing feasibility studies and economic forecasts; and collecting and analyzing a wide range of social and economic data for use by business, government and the general public.

ERP's regular surveys of Yukon's consumer prices, housing rental markets and labour force, as published in the quarterly Yukon Economic Review, are probably the most well known of its activities.

##### **Review of 1981-82**

In 1981-82, ERP prepared government positions on non-renewable resources, transportation, energy, and economic development strategy.

ERP worked closely with industry through the MacMillan Pass Task Force, in order to help promote communication and co-operative industry/government studies in the MacMillan Pass area. For example, a number of environmental studies and an economic study on the advantages of operating a commuter service versus locating a townsite in MacMillan Pass were cost shared. As well, a series of position papers were prepared and presented to the Task Force as a prelude to the non-renewable resource policy.

The Branch provided assistance in the preparation of a Yukon Government policy and position paper on oil and gas development in the Beaufort. It also determined the funding requirements for studies to determine how Yukoners can obtain the maximum benefit from Beaufort Sea developments.

As well, ERP prepared a series of interventions to the Canada Transport Commission reflecting the Government's support of a strong regional air network in Yukon. ERP intervened in Pacific Western's application to drop the Whitehorse-Yellowknife route; Trans North Air's application to extend its services to Inuvik, Yellowknife, Tishu Valley and Alaska; and Air North's application to fly from Alaska to Yukon.

Finally, ERP provided advice and assistance to the Yukon Government in its negotiation of a \$1 million loan to the White Pass and Yukon Route Railway in April 1981. The loan reflects Government's recognition of the fundamental importance of the railway to the economy.

#### **Research and Planning**

In 1981-82, the ERP carried out a variety of research projects. These included:

1. Study on the Impact of Higher Mortgage Rates on Yukon Households;
2. Economic Forecast for Yukon 1981-1991;
3. Economic potential of Faro;
4. Background paper on a proposal for a modified Business Development Assistance Program in Yukon;
5. Background paper on a Canada/Yukon Comprehensive Development Agreement;
6. Background paper on a Canada/Yukon MacMillan Pass Planning Agreement;
7. Special report on the Spatial Price Survey 1981; and
8. Study of the issues relating to the use of water for placer mining.

In addition, ERP agreed to prepare the necessary legislative and implementation procedures for transferring the Small Business Loans Fund from DIAND to Yukon. This fund will form the basis for the first universally applicable business assistance program undertaken by Yukon.

#### **Data Development and Dissemination**

During 1981-82, ERP continued to expand the Yukon Economic Review. The Tables and publication covers were completely redesigned to provide a simpler, but more consistent and effective presentation. As well, the Spatial Price Survey was further expanded and improved and the Branch provided assistance to the Yukon Food Price Inquiry as a result of the spatial survey.

In an effort to assist Yukon's business community, ERP carried out a project to design a Yukon Business Directory. The purpose of the Directory is to assist companies involved in major projects to buy their supplies from Yukon businessmen. The Directory, which is expected to be finished in 1982, could greatly benefit Yukon businesses, that might otherwise be overlooked by the large companies, which have traditionally used southern suppliers.

In addition to the above activities, the Branch handles more than 1000 requests each year for economic information from businesses, consultants and researchers. To aid its staff in responding to these requests (and to facilitate its own research), the Branch maintains a well-stocked research library.

### **Plans for 1982-83**

In 1982-83, ERP intends to expand its data collection and dissemination activities. The Branch will produce a new Yukon statistical review during the year, and a computerized business directory is expected to be in operation. ERP will attempt to make more data available to new businesses by developing a market information booklet and a Yukon data sheet.

A Yukon mineral policy will be presented for public comment during the year and increased emphasis will be placed on the development of medium and smaller mining projects to balance large scale projects. Nonetheless, the larger projects will be a major thrust with emphasis being placed on the MacMillan Pass Task Force.

Research efforts will be increased. For example, the Branch will make more use of computer modelling and simulation. It will also conduct a benefit cost analysis of the MacMillan Pass Project, assess the economics of truck transportation and increase its work in assessing the potential economic benefits for Yukon from projects in the Beaufort Sea.

### **Tourism Planning and Development**

#### **Responsibilities**

The major responsibility of the Tourism Planning and Development Branch is to develop a competitive international tourism product that will generate economic and social benefits for Yukoners.

#### **Review 1981-82**

During 1981, about \$2 million in tourism-related construction in the Yukon was reported. This activity indicates that the tourist industry is continuing to grow. The Yukon tourist industry received a major boost in April 1980 from the Canada-Yukon Tourism Agreement (CYTA). This is a two-year, \$6 million federal-territorial agreement for tourism development. The Yukon's contribution is \$900 thousand, with the balance coming from the Department of Regional Industrial Expansion (formerly DREE) and the Department of Indian Affairs and Northern Development. Of the \$6 million allocated under the CYTA, \$5.7 million was spent on tourism development and \$300 000 on research and planning. The Agreement will help to smooth the peaks and valleys of the traditional "boom or bust" pattern of Yukon's resource-based economy. At the same time, the CYTA provides for protecting and enhancing the historical and wilderness aspects that make Yukon unique. The Agreement was recently extended for a third year.

The most visible undertaking under the CYTA has been the construction of the Whitehorse Cross-Country Ski Chalet, which hosted the 1981 World Cup and North American Cross Country Ski Championships in March 1981. This project was a step toward diversifying Yukon's appeal to tourists and attracting visitors in periods other than the peak travel season in summer.

The Klutane region attracted international attention last summer. On August 2, 1980, Klutane National Park and the St. Elias-Wrangell Mountain Ranges were designated World Heritage sites. Both sites are expected to attract many tourists in 1982 and to stimulate more tourist interest in, and enjoyment of Yukon's unique and varied wilderness areas.

As part of the ever-increasing importance of this region, the Tourism Planning and Development Branch is developing a Klutane regional tourism plan. In 1981, the Branch carried out basic research in preparation for developing the plan. Public input and finalization are expected in mid-1982.

In the private sector, Dawson's Downtown Hotel was built to replace the old hotel, which was destroyed by fire a few years ago. The new hotel will be opened for the 1982 tourist season and will include a restaurant, lounge and 35 units.

The Klondike Visitors Association, based in Dawson City, undertook continued studies for the expansion of the Diamond Tooth Gertie's Gambling Hall operation (the source of much of its revenue). Restoration and expansion are expected for 1982. In addition, grants were made to various organizations in Dawson to provide financial assistance to the community's development, particularly for downtown improvements to Dawson City. Grants also went to many individuals for placing facades on residences and businesses.

One research study of particular interest undertaken in 1981 was Tourism Yukon's "Coupon Conversion Study". This study was designed to follow-up on consumer enquiries for information about visiting Yukon, or including it as part of a trip to or from Alaska. The 1981 study is a much-expanded version of previous annual studies, necessitated in part by major shifts in the previous season's marketing campaigns. Results from the study indicate that over 17 per cent of 51 000 Canadian and U.S. residents who requested and received Yukon promotional literature actually visited Yukon in 1981. In addition, nearly 10 per cent of 280 000 people who asked for Yukon-Alaska booklets also visited Yukon. In effect, this literature encouraged a total of 38 000 people to visit Yukon in 1981. These travellers spent nearly \$26 million on goods and services in Yukon, a significant contribution to the Yukon tourism industry's total earnings of about \$51 million. Results of this study are now providing guidance to Tourism Yukon in refining its 1982 marketing activities in preparation for 1983.

#### **Plans for 1982-83**

A series of projects that were started under the Canada-Yukon Tourism Agreement will be continued during the coming year, and new projects currently planned will begin during this period. Research and planning will be carried out for longer-term development programs and there will be more emphasis on economic development and marketing within the tourism industry.

### **Department of Intergovernmental Relations**

#### **Responsibilities**

In April of 1981, the Department of Intergovernmental Relations was created by amalgamating the existing Pipeline Branch, the Land Claims Secretariat and the Directorate of Intergovernmental Affairs. The Department was formed to better co-ordinate the efforts of the various Yukon Government departments, and to provide more effective co-ordination between the Yukon and other levels of government. The Department maintains an Ottawa office, staffed by an Associate Deputy Minister.

The Department is currently responsible for intergovernmental relations and for internal policy analysis. It also continues to co-ordinate all Yukon Government Alaska Highway Natural Gas Pipeline and Beaufort Sea activities, and is responsible for the Emergency Measures Office.

## *Review 1981-82*

### *Pipeline Branch*

During the past year, the Branch has continued to monitor a variety of aspects concerning the Alaska Highway Natural Gas Pipeline. For example, it reviewed and approved the final drafts of the environmental and socio-economic terms and conditions governing construction of the pipeline. In addition, the Department has reviewed project plans resulting from the terms and conditions; most of which are expected to be approved in 1982. These plans relate to areas such as manpower, transportation and business opportunities.

The Department also monitored the land use permits issued for geotechnical drilling and testing programs, environmental concerns regarding granular material allocation, and the use of gravel pits for material storage. Land use along the pipeline route was also verified by reviewing cadastral surveys.

The Branch has negotiated several agreements during the year. These include an administrative agreement with the Northern Pipeline Agency that formalizes the consultative process between it and the Yukon Government. Cabinet has approved the agreement which will be signed in 1982. In addition, an easement agreement for the pipeline right-of-way was prepared in consultation with both the Northern Pipeline Agency and the Department of Indian Affairs and Northern Development. It is particularly advantageous to the Yukon because, unlike other pipeline right-of-way agreements, rentals paid will be reviewed every five years. The Department also negotiated an agreement with Foothills Pipelines Ltd. in which the Company agrees to pay all costs that the Department incurs that are directly related to the pipeline project.

Two departmental projects were of long-term importance to the Yukon. The first of these was the completion of draft legislation covering the heritage fund. It will be brought forward during the 1982 Spring Session of the Yukon Legislature. The second project involved the continued development of plans for the eventual distribution of natural gas to Yukon communities.

### *Beaufort Sea*

In 1981, the Department assumed responsibility for monitoring Beaufort Sea development. In carrying out this responsibility, the Department participated on the federal Beaufort Sea Task Force and reviewed and commented on the guidelines developed by the Beaufort Environmental Assessment Review Panel. The Yukon has two representatives on this Panel.

The Department organized several meetings between Beaufort proponents and senior government officials and co-ordinated the preparations of the major policy statement "Beaufort Development: The Yukon Perspective". The Policy statement resulted from the work of an internal Yukon Government Beaufort Sea Task Force, which the Department chairs.

### *Ottawa Office*

Since it opened during the summer of 1981, the Ottawa office has been acting as a "listening post" for the Yukon Government by attending intergovernmental, parliamentary and senate committee meetings, and through daily contact with federal government public servants.

The office has also acted as a point of contact for anyone who wants information about the Yukon.

In 1982-83, the office will continue with these activities.

### *Intergovernmental Relations Branch*

During the year, the Branch took part in discussions on a wide range of topics having inter- and intra-governmental implications. Specifically, the Branch represented the Yukon Government on the National Energy Supply Allocation Board; it participated on the Federal/Provincial/Territorial Consultative Committee on Government Regulation, the Shakwak Review Committee, the Senior Policy Committee on Northern Development and the National Environmental Emergency Team. It was also involved in developing the emergency measures and legislation that would be required in the event of national petroleum shortages.

The Branch was also involved in assessing a number of policies proposed by other Yukon Government Departments. For example, it participated in negotiating a comprehensive Flood Damage Reduction Agreement and a Waste Heat Agreement between the Northern Canada Power Commission and the Yukon Government.

The protocol section co-ordinated a number of diplomatic visits by foreign and other officials to the Yukon and participated in several ceremonies for a number of special events. Representatives of the Department also arranged and participated in a number of Joint Alaska/Yukon/British Columbia meetings.

Finally the Branch provided secretarial services to the Federal Interdepartmental Co-ordinating Committee throughout the year.

### *Emergency Measures Office*

During the 1981-82 fiscal year, EMO responded to local emergencies at Carcross (flooding), Old Crow (power loss due to fire), and potential flooding conditions at Rock Creek and Mayo.

The Office arranged with Emergency Planning Canada (EPC) to acquire communications equipment on a cost-shared basis. This equipment will considerably enhance the Office's ability to respond to emergency situations. It also participated in a specialized emergency training program sponsored by EPC. Candidates from various communities throughout Yukon attended the course.

The reorganization of EMO was started. This restructuring will allow EMO to develop joint emergency planning and response procedures with other levels of government in the Yukon. Territorial legislation was amended to reflect a broader awareness at the municipal and Territorial level of the need to develop the ability to respond to emergencies.

### *Plans for 1982-83*

The Department will continue to monitor the pipeline project. This activity will include approval of all pipeline plans and will involve the development of proposals for dealing with the effects of the pipeline. The Department will concentrate on developing a pipeline manpower training program and assessing all the environmental aspects of construction planning. Negotiations will also take place on mechanisms for recovering the cost of providing the transportation infrastructure necessitated by the project.

Once Cabinet approves the project, a major task for the Department will be to prepare a detailed feasibility study for natural gas distribution.

In 1982, the Department's involvement with Beaufort-related activities will consist of preparing several supplementary position papers that will more clearly enunciate the Yukon Government's policy on a number of related issues. It will also increase the number of meetings between industry and government to determine common goals and develop methods for achieving them. Of particular interest will be northern business opportunities, employment and land use.

The Beaufort Sea Environmental Impact Statement is scheduled to be released in June 1982; the Department will be spending a great deal of time reviewing and commenting on its contents.

Finally, the Department will be expanding its internal policy review and assessment functions to promote greater consistency among the Yukon Government's planning activities. The Department will also initiate or take part in intergovernmental discussions on a wide range of issues, such as resource revenue sharing, offshore jurisdiction and land use planning.

## **Land Claims Secretariat**

### ***Responsibilities***

The Land Claims Secretariat is a branch of the Department of Intergovernmental Relations. It is responsible for promoting the settlement of native land claims and the development of responsible government in the Yukon.

### ***Review 1981-82***

Intensive negotiation of Yukon Indian Land Claims was conducted throughout 1981 and is continuing in 1982. Substantial progress has been made. As of February 1982, the Secretariat had reached sixteen sub-agreements covering a broad range of settlement issues. The details of four sub-agreements involving Elders' benefits, hunting, trapping and fishing have been released to the general public.

Other sub-agreements have been reached on such matters as eligibility, land selection and tenure, land use planning and environmental assessment, upgrading municipal utilities and service, housing, education, health care, hospital services and social services. The parties are now negotiating land selection and the form of local government for each of the twelve Yukon Indian Bands. One band has completed its selection, while two others are working to complete this process. Certain issues still remain outstanding, such as taxation, resource revenue sharing and financial compensation.

Once sub-agreements have been negotiated for each issue, they will be collated, amended if necessary and used as the basis for a broad Agreement in Principle. The Agreement in Principle will be one of the most comprehensive yet achieved in Canada and should considerably reduce the time required to reach a final agreement.

In contrast, COPE Claim negotiations have stagnated. Following the letter of instruction of December 24, 1980, the Minister of Indian Affairs and Northern Development suggested a brief "cooling off" period before resuming talks. In February 1981, however, COPE initiated a media campaign charging that the federal government had been negotiating in bad faith.

On April 30, 1981, Senator Steuart, the federal negotiator, advised the Government of Yukon that the federal government was preparing a proposal which would consider the terms of both the COPE Agreement in Principle and the Yukon Government's *Northern Yukon Resource Management Model*. Subsequently, on May 20, 1981, Senator Steuart forwarded a discussion paper to the Yukon Government outlining proposals for implementing Section 12 of the COPE Agreement in Principle. He expressed the view that the discussion paper would serve as a catalyst for the resumption of negotiations. The Government of Yukon viewed the new federal proposal as being even less acceptable than the original COPE Agreement in Principle. Similarly, COPE found the proposal unacceptable as it deviated somewhat from their agreement. Consequently, negotiations have not been resumed.

Throughout 1981, the Land Claims Secretariat also carried out constitutional research in relation to developing Yukon government positions on the repatriation of the Canadian constitution.

### ***Plans for 1982-83***

The Land Claims Secretariat will continue to participate in native land claim negotiations and undertake further land claims and constitutional research.

## **Department of Municipal & Community Affairs**

### ***Municipal Services Branch***

### ***Responsibilities***

The Branch fosters the development of local government in Yukon communities and provides a full range of municipal services, including guidance to municipal governments, orderly community planning and land development.

### ***Review 1981-82***

The implementation of the new Municipal Ordinance, which the Legislative Assembly had passed in the Fall 1980 Session, was deferred until September 1982, as recommended by a Municipal Incorporation Inquiry Board. A new Municipal Finance Ordinance was passed in the Spring 1981 Session, then amended slightly at the Fall 1981 Session to ensure that no community would suffer financially as a result of the delay in implementing the Municipal Ordinance. A Municipal Capital Expenditures Ordinance, designed to replace the Community Assistance Ordinance, was introduced at the Fall 1981 Session but was not tabled until the Spring 1982 Session to provide an opportunity for public input.

Major projects for the year included: the Carmacks Swimming Pool (in conjunction with Resource Corps); completion of the Dawson Water and Sewer System and the construction of the Mayo enclosed Skating Rink, Public Works garage and the Old Crow Skating Rink. The Haines Junction Sewage Lagoon and Mayo Administration projects were also started. Detailed engineering work was carried out on a number of other projects so that construction can begin in the next fiscal year.

### **Plans for 1982-83**

Implementation of new legislation will occur in 1982. Major capital projects that are anticipated include: completion of Haines Junction Lagoon and Mayo Administration Building, upgrading the Mayo Water Supply, the Teslin and Watson Lake Recreation Complexes, the Watson Lake Sewage Force-main, and boring a community well in Old Crow. Work on the Watson Lake Sewage Lagoon will proceed.

### **Lands Branch**

#### **Responsibilities**

The Lands Branch is responsible for the administration and management of lands under the control of the Yukon Government and for the orderly sale and leasing of community lands.

#### **Review 1981-82**

Approximately 170 sales agreements were signed with individuals and builders. There were over 100 leases in effect for such uses as recreation and agriculture.

### **Plans for 1982-83**

The Lands Branch will be concentrating more on the management of quarrying operations and of forests, particularly with respect to fuel wood. However, the Branch's principal activity will continue to be the streamlining of land administration procedures. The Lands Branch expects that sales of residential land will be slow in 1982-83. The federally-operated recreational cottage program will be transferred to the Branch during the fiscal year. New rural residential programs and agricultural programs will be started during the year.

### **Assessment Services Branch**

#### **Responsibilities**

The Branch provides property assessment services to all Yukon Taxing Authorities by preparing assessment rolls for municipalities and the Yukon Government. It also defends assessments at Assessment Review and Appeal Board Hearings, assists the Territorial tax collector and provides a real property appraisal service to other government departments. Assessment values now represent current property values. The accompanying chart compares 1981 and 1982 assessment values.

<i>Location</i>	<i>1980-81</i>	<i>1981-82</i>
	<i>Assessment</i> <i>Tax Year</i>	<i>Assessment</i> <i>Tax Year</i>
Whitehorse	\$498 050 000	\$553 455 720
Dawson City	19 442 000	20 095 550
Faro	36 940 000	46 706 200
Other Areas	177 356 000	259 163 528

### **Protective Services Branch**

#### **Responsibilities**

Protective Services is responsible for the following three functions:

1. *Building Inspection* — It inspects buildings to monitor the extent to which they conform to the Building Standards Ordinance, Area Development Ordinance, Electrical Protection Ordinance, Fire Prevention Ordinance, Boilers & Pressure Vessels Ordinance, Elevator & Fixed Conveyances Ordinance and the Gasoline Handling Ordinance.

2. *Fire Training and Investigation* — The Fire Marshal's Office (part of Protective Services) is responsible for seeing that all volunteer fire departments are properly equipped and trained to fight fires that could take place in their communities. Regular practice sessions are held by local departments to practice methods taught by the F.M.O.

The Branch investigates all fires occurring outside the Whitehorse City limits.

3. *Ambulance Service* — The Branch also operates the Yukon Ambulance Service. The Ambulance Inspector from Protective Services inspects ambulance operations and oversees the training of volunteer attendants in basic first aid.

#### **Statistics and Activities**

Value of construction totalled more than \$15.5 million during 1981. In 1981, approximately \$5 million of property was destroyed by fire. In the same year, three deaths were attributed to fire. There are 14 volunteer fire departments and approximately 85 volunteer fire fighters, for which this Branch provides training and other back-up services. The ambulance operation includes 13 full time personnel, plus 12 ambulance stations in various areas of Yukon, manned by approximately 150 volunteers.

### **Department of Highways & Public Works**

#### **Responsibilities**

The Department is responsible for maintaining and improving transportation systems to promote economic development in the Yukon, constructing and maintaining buildings to an approved standard and for providing engineering services to government departments.

#### **Responsibilities of Branches**

The Highways and Transportation Branch consists of four Sections. These are: Highway Maintenance, Highway Construction, Mechanical Operations and Airports Management. Airports Management, however, is not responsible for the two Arctic "A" airports in the Yukon at Whitehorse and at Watson Lake. These are the responsibility of the federal Department of Transport (DOT).

The Public Works Branch operates two Sections: Building Maintenance and Building Construction. Building Maintenance is responsible for maintaining all buildings owned by the Yukon Government (except those operated by the Yukon Housing Corporation). The Building Construction section is responsible for all Government of Yukon building construction, again excluding buildings for the Yukon Housing Corporation.



Heavy equipment, Cyprus Anvil Mine, Faro, Y.T. Photo by Pat Morrow, 1982.

The Municipal Engineering Branch is responsible for all water and sewer construction in the Yukon (except that carried out directly by the municipalities) and for street construction and land development projects. The Department of Municipal and Community Affairs funds all work carried out by this Branch.

The Administrative Branch provides central administrative services such as cost control and accounting, preparing estimates, administering contracts, personnel and other central administrative functions.

#### **Review 1981-82**

Two major changes took place during the year. The first was the transfer of all "Property Management" functions to the Department of Government Services. The second was the re-organization of the Department's eight Sections into four Branches as noted above.

The Highways and Transportation Branch maintained 4 419.4 km of highways and roads, applied calcium chloride dust treatment to 1 134 km and extended bituminous surface treatment by 236 km. The Dawson Ferry carried 35 376 vehicles and 114 444 passengers over the Yukon River at Dawson City, compared with 38 013 vehicles and 126 479 passengers for the previous year. The cable barge at the Ross River Settlement carried 5 511 vehicles across the Pelly River, compared with 4 443 vehicles for 1980-81. 32 km of the Klondike Highway between the Alaska Highway and Carmacks were

reconstructed and a major program to replace drainage structures on the South Canal Road was continued. Vehicle Weighing Stations were operated at Watson Lake, Whitehorse and Haines Junction. The Mechanical Section of this Branch maintained and repaired approximately 1 500 pieces of equipment. Maintenance of 10 Arctic "B" and "C" Airports was carried out with DOT federal funding and included the operation of airport facilities at Old Crow and at Faro. The Department also maintained 20 territorial airstrips, mainly for emergency purposes.

With a complement of 28 tradesmen, the Public Works Branch carried out preventative maintenance and emergency repairs for 186 buildings. Building construction started on the Junior Secondary School at Porter Creek, a two-year project. The Branch completed the Carmacks School Addition and a number of other projects, such as new Staff Quarters for the Klondike Camp on the Dempster Highway and Renovations to Christ The King High School in Whitehorse. The Faro School addition, which was started in 1980 was also completed.

The Municipal Engineering Branch undertook a number of small projects last year including items such as continuation of the Old Crow River Bank Stabilization, small land development projects and repairs to the Dawson sewer system.

#### **Plans for 1982-83**

All existing "Operation & Maintenance" programs such as highway maintenance, building maintenance, repair and upkeep of equipment and maintenance and operation of airports and airstrips will continue. It is estimated that 975 km of highways will receive Calcium Chloride applications for dust control and it is planned to apply bituminous surface treatment to 272 km of highways as a dust control measure and also as a stage construction for eventual paving.

The new Passenger/Cargo Shelter for the airport at Ross River will be operated and staff will be hired to provide Observer/Communicator services at that location in addition to the service now being provided at Old Crow and at Faro. Provided DOT funding is made available, the Branch plans to construct Passenger/Cargo Shelters at Beaver Creek and at Haines Junction, and to staff these installations with Observer/Communicators.

The highway reconstruction program on the Klondike Highway between the Alaska Highway and Carmacks will continue. The first year of a two-year project to reconstruct the Faro Access Road will start.

Building construction started in 1981 will continue. A new Administration Building will be constructed in Mayo, a new school at Pelly Crossing, a Staff Quarters Building at Tutchitua Highway Maintenance Camp and a number of minor building construction jobs will be carried out. It is proposed to build a sewage lagoon, a forcemain and a lift station in Haines Junction. The Department will also carry out a number of minor municipal engineering projects including small Land Development jobs and community street surfacing.

## Department of Health & Human Resources

### **Responsibilities**

The Department of Health and Human Resources is responsible for planning, developing and providing comprehensive health and social programs and services designed to improve the health and well-being of individuals, families and communities. The Department also funds community agencies under Government of Yukon Contributions Agreements, which are complementary to Human Resources programs and services. Within the Department, the Administrative, Budget and Financial Planning Unit and the Research and Training Unit provide support services. The implementation of a management information system for Human Resources has provided an automated index of the Department's clients and their involvement in any of 13 departmental programs.

### *Child Welfare Branch*

#### **Responsibilities**

Legislation administered by this Branch includes the Child Welfare Ordinance, the Day Care Ordinance and the Juvenile Delinquents Act. Programs delivered include juvenile probation, family services, day care, residential facilities for youth, services for children in care including adoptive homes, group homes, foster homes and out-of-Territory placements.

#### **Review 1981-82**

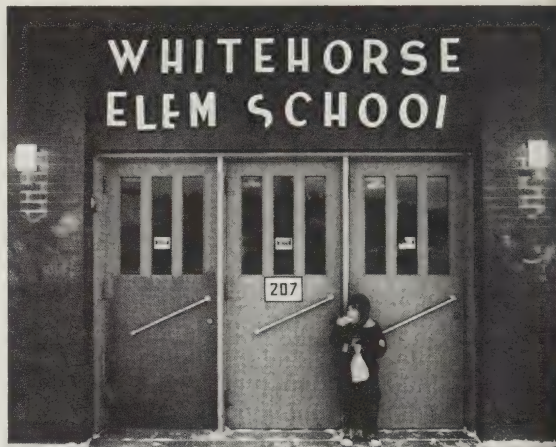
In 1981-82 the Branch:

- established the Day Care Subsidy Program effective July 1, 1981;
- instituted Departmental Child Abuse Protocol;
- implemented a special program designed to help permanent wards to live independently;
- held a successful promotional week for foster parents in October 1981;
- expanded social network groups for adolescents in Whitehorse and some outlying communities;
- completed the development of Juvenile Probation and Court Manuals;
- established two new residential facilities for juveniles; and
- formed a teen development association.

#### **Plans for 1982-83**

Plans for this period include:

- a review of amendments to the Child Welfare Ordinance;
- a review of amendments to the Corrections Ordinance pertaining to juveniles;
- developing planning strategies in relation to the new Young Offenders Act;
- promoting of public awareness of the need to report instances of child abuse; and
- the development and maintenance of an information package for potential day care operators.



Whitehorse Elementary School, Whitehorse, Y.T. Photo by Pat Morrow, 1982.

### *Whitehorse Region*

#### **Responsibilities**

Legislation administered by the Whitehorse Region includes the Social Assistance Ordinance, Rehabilitation Services Ordinance and Pioneer Utility Grant Ordinance. Programs delivered include social assistance, child protection and family services, services to seniors, community development, vocational rehabilitation services and the Pioneer Utility Grant.

#### **Review 1981-82**

During 1981-82 Whitehorse Region:

- allocated \$10 000 for the international Year of Disabled Persons to fund special projects;
- implemented a "Handy Bus" transportation system for individuals who are unable to use the regular transit systems due to age or disability;
- expanded the public service on-the-job training program for disabled persons;
- established the Headway House Group Home for disabled persons;
- provided a \$100 000 Government of Yukon capital grant to the Yukon Rehabilitation Centre;
- worked to develop the Special Employment Resources Services; and
- increased the Pioneer Utility Grant for seniors from \$300 to \$360 per year.

#### **Plans for 1982-83**

The Region plans to:

- review programs aimed at senior citizens to identify gaps and augment other program initiatives in conjunction with the United Nations World Assembly on Aging year;
- carry out a study to examine current policies on special needs in social assistance; and
- participate in a Federal/Provincial study of a national insurance scheme for the disabled.

## *Regional Services & Alcohol and Drugs Branch*

### **Responsibilities**

The Branch operates under legislation that includes the Child Welfare Ordinance, the Social Assistance Ordinance and the Juvenile Delinquents Act. Programs and services that the Branch delivers are child protection, juvenile probation, foster care, social assistance and family services. It also delivers alcohol and drug counselling, treatment, prevention/education, employee assistance programs and community alcohol worker programs.

### **Review 1981-82**

In 1981-82 the Branch's activities included:

- providing preventive services for high-risk youth populations;
- staff involvement in occupational alcoholism programs, medical education programs and criminal justice training programs;
- developing and distributing kits explaining the danger of alcohol to the foetus;
- developing the impaired drivers program; and
- holding a conference on Alcohol and Drugs in conjunction with a Native Health Conference.

### **Plans for 1982-83**

The Branch plans to:

- promote the industrial alcohol awareness campaign;
- review and evaluate outpatient treatment and the training needs of counsellors;
- support efforts to involve youth in activities related to preventing the abuse of alcohol; and
- encourage community involvement in the development of a crisis intervention service.

## *Health Services*

### **Responsibilities**

This Branch administers legislation including Yukon Health Care Insurance Plans and the Medical Travel Ordinance, Cancer Ordinance and Mental Health Ordinance. It delivers various programs such as the Pharmacare, Vital Statistics and Family Life Programs as well as the Speech Pathology and Audiology programs.

### **Review 1981-82**

In this period, the Branch:

- implemented a Pharmacare plan providing prescription drugs for Yukon senior citizens;
- developed guidelines for medical travel, Pharmacare, Cancer Ordinance plastic surgery benefits;
- reviewed the Mental Health Ordinance and committal procedures;
- developed a co-ordinating committee designed to facilitate information exchange, planning and financial control by Medical Services Branch and Health Services Branch; and
- recruited a full-time clinical psychiatrist for practice in Yukon.

### **Plans for 1982-83**

Plans for 1982-83 include:

- the review and assessment of administrative and computer systems for use in health administration;
- preparation of new legislation for the Yukon Health Care Plan; and
- the control of acute care costs and re-allocation of these resources to preventive health promotional activities.

## **Department of Justice**

### **Responsibilities**

This Department is responsible for administering justice throughout Yukon and for developing the systems and programs required to carry out that responsibility. Three Branches (Legal Services, Court Services and Corrections Services) administer various programs, including the Courtworkers Program, Legal Aid, the Police Services Contract and the Special Native Constable Program. Responsibility for adjudication of claims under the Compensation to Victims of Criminal Injury Program has been transferred to the Workers Compensation Board from the Supreme Court, but payment of awards remains a function of this Department.

The Legal Services Branch provides legal advice and services to the Commissioner, members of the Legislative Assembly, government departments and agencies. In addition the Branch is responsible for drafting Acts and regulations, prosecutions under Territorial Acts and court appearances on behalf of the Government and its officers. The Land Titles Office is part of this Branch and administers the Canada Land Titles Act in the Yukon. The third program under Legal Services is the office of the Public Administrator/Chief Coroner. The Public Administrator looks after the estates of deceased persons and persons declared mentally incompetent. The Chief Coroner is responsible for administering the Coroner's Ordinance and ensuring that coroners are available throughout Yukon to carry out investigations of sudden death.

The Court Services Branch includes the Supreme Court, Court of Appeal, Territorial Court and the Sheriff's Office. Justice of the Peace Courts are held in most outlying areas and the Territorial Court travels to rural communities as required. The court system provides small claims officials and lay juvenile judges. Prosecution of Criminal Code and federal offences is the responsibility of The Crown Prosecutor's Office, which the Federal Department of Justice maintains in Whitehorse. The Sheriff's responsibility is to enforce the civil law throughout Yukon.

Corrections Services consists of two programs, Institutional Corrections (Whitehorse Correctional Centre) and Community Corrections (Probation Services). The Centre is a medium-security institution providing custody and care of male and female prisoners serving up to two years-less-a-day. The Centre is also used to detain persons remanded for trial or sentencing and those awaiting immigration, deportation and appeal hearings. The Centre is also involved with prisoners awaiting transfer to federal or mental institutions.

The Centre operates a number of programs designed to facilitate the return of prisoners to society. Probation Services supervises offenders and prepares reports ordered by the court. Probation Workers travel from offices in Whitehorse, Watson Lake and Mayo to provide services to all other areas, as required. The emphasis is on keeping offenders out of institutions, and the community work-service program started in Whitehorse in 1979, and extended to Watson Lake and Mayo the following year, is now available in most rural communities as well.

#### **Review 1981-82**

##### *Land Titles*

Certificates of Title	1 062
Certificates of Search	1 527
General Register Certificates	420
Certificates of Change	560
Plans	72
Document Registrations	3 641

##### *Public Administrator*

Files Opened	70
Current Open Files	271

##### *Chief Coroner*

<i>Manner of Death</i>	
Natural Causes	92
Accidental	30
Motor Vehicle Accidents	20
Suicide	5
Homicide	1
Missing Persons	1
Other	1
	150

##### *Supreme Court*

Criminal/Civil Case Load	725
Divorce Case Load	148

##### *Territorial Court*

Adult Criminal Cases (Whitehorse)	6 680
Juvenile	325
Small Claims	420

##### *Legal Aid*

Applications Accepted — Civil	77
— Criminal	502

##### *Probation Services*

Assigned New Cases	804
Number of Court Reports	352
Days Spent in Rural Field Service	187
Average Number of Cases under Supervision	465

##### *Whitehorse Correction Centre*

Number of Inmate Days	23 707
Average Number of Inmates	65
Work Releases Granted to Inmates	17
Hours of Community Work by Inmates	21 396
Hours of Institutional Work by Inmates	50 999

#### **Plans for 1982-83**

An extensive renovation and reorganization of the facilities in the Corrections Centre will be carried out, which is expected to make the Centre eligible for accreditation by the American Corrections Standards Association. The Probation Services is continuing to develop programs that will enable offenders to be ordered to perform community service work in lieu of paying fines or being imprisoned.

The Department will carry out the next phase of the development of the Statistics and Management Information System. It is intended that the System will be the Canadian model for smaller jurisdictions and will work in conjunction with the Justice Information Centre established last year in Ottawa. Efforts are continuing to develop Human Rights legislation and a program of education, and to establish a Human Rights Commission. The Department will continue its efforts to fund the construction of a new Court House and another building to consolidate the many components of the Justice system now housed in a number of locations. The Department will continue working toward making Yukon laws uniform with those of other jurisdictions, especially those laws governing the commercial and social rights and duties of the public. Finally, studies related to Victims of Crime will be started in anticipation of future programs in this area.

#### **Public Service Commission**

##### **Responsibilities**

The Public Service Commission is the agent of the Yukon Government for all matters related to the staff of the public service, and the determination and administration of terms and conditions of employment. It carries out its responsibilities within the statutory framework provided by the Public Service Commission Ordinance and Regulations and the Public Service Staff Relations Ordinance. Appointments are made on the basis of merit; the terms and conditions of employment for unionized employees are governed by the collective agreement entered into by the Government of Yukon and the Public Service Alliance of Canada.

The Public Service Commission's departmental objective is defined as follows:

To provide for the recruitment of public servants, job evaluation, pay and benefits administration, negotiation and administration of collective agreements, staff establishment control, organization analysis, employee training and development, appraisal, and employee documentation and records administration.

## *Recruitment and Training Branch*

### **Responsibilities**

To provide for the recruitment, selection, appointment and promotion of public servants; to fund training programs carried out by or on behalf of the Government of the Yukon; to reimburse employees for costs of tuition and travel incurred as a result of studies undertaken at approved educational and training institutions; to provide for the funding of training positions within the government service for affirmative action purposes e.g., for women and the disabled; to provide on-the-job training assignments for trainees funded by external agencies.

### **Review 1981-82**

During the 1981-82 fiscal year, the following projections applied. Final figures were not available at the time this report was compiled.

### **Recruitment**

Appointments from outside Public Service:	
Permanent	205
Casual (including contract)	1 391
In-service Appointments:	
Promotions	65
Transfers	80
Total Appointments	1 741
Advertised Competitions	296
Appointments from referral by Canada Employment Centre (Entry Level)	459
Appointments	
Made: From Within Yukon	315
From Outside Yukon	35
<b>Training</b>	
Short Courses Conducted	49
Individuals Attending Courses	595
On-the-job Training Assignments	36

### **Classification and Employee Relations Branch**

### **Responsibilities**

To provide for the development and administration of terms and conditions of employment for employees of Government of Yukon.

### **Review 1981-82**

The following volume of transactions for 1981-82 are of interest:

Proposals reviewed	
(class regrading and job reclassification)	336
Departmental Organization Analysis	6
Number of Employee Grievances or	
Complaints Investigated	30
Meetings Held With Union Representatives	25
Formal Hearings Before an Adjudicator or Arbitrator	4

Considerable effort was expended on developing and implementing the new management classification and pay plan.

## *Employee Benefits Branch*

### **Responsibilities**

To provide for the establishment, maintenance and control of employee documentation and personnel records, and to advise employees in relation to pay and benefits.

### **Review 1981-82**

In 1981-82, branch personnel handled the following types and numbers of transactions (in rounded figures): Document Transactions 36 000; Pay Rate Adjustments 3 500; Interviews/Telephone Calls 60 000.

During the 1981-82 fiscal year, the Commission transferred the preparation of pay input and documentation of casual employees to departments. Commission staff held seminars to encourage a smooth transfer of these responsibilities and to familiarize departmental personnel with them. Extensive work has been done with representatives of the Department of Finance and Computer Services Branch to develop and implement a new computerized payroll/personnel package.

### **Plans for 1982-83**

The Department expects to continue applying the recently introduced "Underfill" Policy. Under the Policy, employees and other local candidates may be certified for appointment in instances where they do not meet all of the formal requirements for appointment, if, in the judgement of the selection board, they are likely to meet these requirements within twelve months. Such appointments are made only, where, in a particular competition, no candidate is certified as being fully qualified, or where no qualified candidate will accept appointment. The main purposes of the policy are to provide better opportunities for career development and to reduce hiring from outside the Yukon. Further meetings are scheduled to finalize and implement a Job Bridging Program. This Program is intended to provide opportunities for clerical staff to be promoted into administrative and semi-professional areas.

An advisory committee is developing procedures, information packages and training sessions for an Employee Assistance Program. The Program is intended to expand the existing Employees' Alcoholism and Drug Program by providing confidential assistance to employees at all levels whose performance at work is being adversely affected because of personal problems. Employees and, if required, family members will be referred to a private agency for counselling. The Government of Yukon will pay for these services.

Because of financial constraints, funding by the Public Service Commission for the On-the-job Training Program will be decreased for 1982-83. Attempts will be made to maintain the Program by requesting financial assistance from sponsoring departments. Emphasis will be placed on developing a number of internal training packages geared to dealing with particular recurring problems and specific classes of employment. As well, the Department will continue emphasizing the development of other local training resources. In doing so, the objective will be to make training relate more closely to needs and to reduce the amount of money spent on the services of non-resident training consultants.

The Branch will undertake a major review of job evaluation standards, pay structures, benefits and terms and conditions of service for all staff and positions in the Vocational Centre.

Other work will include studying the possibility of introducing the four-day work week in certain work locations, reviewing the terms and conditions of employment for members of the judiciary and conflict of interest guidelines. Continued involvement with the new payroll/personnel computer software package will be of paramount importance to the Employee Benefits Branch. Audit procedures for functions delegated to line departments will be refined and implemented.

#### **Department of Renewable Resources**

##### ***Departmental Objective***

To plan, manage and develop renewable resources to ensure optimum benefit to Yukon residents and visitors.

##### ***Policy, Administration & Information Services Branch***

##### ***Responsibilities***

This Branch is responsible for formulating policies for the management, conservation and use of renewable resources in Yukon; providing technical evaluations leading to the transfer of renewable resources to the Yukon Government; developing a sound data base for managing renewable resources; and providing educational information to the public about these resources.

##### ***Review 1981-82***

The Policy & Information Services Branch was created as a result of the departmental re-organization in October 1981. Administrative Services was added to Policy & Information Services in December 1981. The Policy, Administration & Information Services Branch was closely involved in developing the new Wildlife Ordinance and Regulations in 1981, co-ordinating the establishment of the Agricultural Development Council and in preparing a draft Agriculture Policy. The Branch acquired data and word processing equipment in February 1982 to facilitate data storage and analysis for the Department. The Information and Education Officer conducted Firearms Safety Conservation Education courses in a number of Yukon communities, including Whitehorse, Teslin and Carmacks.

A casual employee was hired to overhaul and assess the Department's library, which has, until now, been unorganized and under-used. The Department has also hired a Stores Clerk who has been developing an inventory of the Department's equipment and supplies. A draft Agriculture Policy and a new Trappers' Compensation Policy were developed. The Branch continued its representation on a variety of committees and was actively involved in establishing an Internal Management Committee to deal with administrative, personnel and other matters involving the Department's three Branches. The Policy, Administration & Information Services Branch provides funding and support for the Yukon River Basin Study.

##### ***Plans for 1982-83***

The Branch anticipates finalization of an Agriculture Policy, to be followed by preparatory work on an Agriculture Ordinance. It plans to produce a number of public information pamphlets, and to continue the Firearms Safety Conservation Education Program. A mechanism for reviewing, co-ordinating and developing departmental policies will be established.

#### ***Wildlife & Parks Services Branch***

##### ***Responsibilities***

The Branch is responsible for protecting Yukon's renewable resources and for ensuring that the objectives for their management are attained through the administration and enforcement of legislation. The Branch is also responsible for enhancing Yukon's renewable resources by planning and implementing resource-related development programs.

##### ***Review 1981-82***

The Department of Renewable Resources underwent major re-organizational changes during 1981-82. The former Field Services Section of the Wildlife Branch and the Operations Section of the former Parks and Historic Resources Branch amalgamated to form the Wildlife & Parks Services Branch. The new Branch contains two main sections: Conservation Officer Services and Operations.

The Conservation Officer Services Section has been organized into three regions, with headquarters in Whitehorse, Ross River and Dawson City. A Wildlife & Parks Services warehouse was constructed in Mayo and construction on a new office warehouse complex was started in Dawson City. The new officers' staff quarters complex in Old Crow was nearing completion when it was destroyed during a fire in the adjacent school. A new mobile unit will be transported to Old Crow via a winter road in March.

Conservation Officers were again busy with enforcing the many statutes for which they are responsible; responding to public complaints; presenting educational programs; administering the Yukon's traplines, fur dealers and the outfitting industry; issuing licences and permits; patrolling trapping activities; providing assistance to technical staff and other agencies; providing administration of various regional and district offices; and performing a number of public relations functions. The Operations Section maintained 62 campgrounds, expanded others along the Dempster Highway and constructed new ones at Million Dollar Falls, Watson Lake and Cogdon Creek. In addition, the Branch provided stabilization and protection to various historic structures along the Yukon River, with much of the work being done at Fort Selkirk. The drafting of the new Wildlife Ordinance was completed in 1981. All 194 sections were assented to in December. A major commitment of staff went into the finalization of the new Ordinance during the months of August through to mid-December.

##### ***Plans for 1982-83***

During the coming year in addition to carrying out its routine activities, the Department will finalize the new organization structure. Construction of the office/warehouse in Dawson should be completed as well as the campground in Watson Lake.

*Resources Planning & Management Branch*

**Responsibilities**

The Branch was established in October 1981 as a result of a major departmental re-organization. It provides a Research and Planning Service covering the use of Yukon's natural resources. The Service is delivered through a resource inventory, habitat assessment and regional planning process. The Branch is also responsible for preparing specific plans for managing wildlife resources, Territorial parks and outdoor recreation areas.

*Research & Planning Division*

**Review 1981-82**

The main effort of the Research and Planning Division was directed toward resource inventory projects. Field mapping of vegetation, surficial deposit, soil and aquatic features of lakes and streams was completed in the MacMillan Pass area during the summer period. Work continued on Southern Lake resource maps and the general report. The report and most maps are expected to be finished by March 31, 1982. Data from the resource maps for the Southern Lakes area are being prepared for input to the Lands Directorate computer system to assist in the production of interpretive maps for the Southern Lakes area.

The Division continued work on two major regional planning projects: the Dempster Highway Corridor and East Klwane Planning area. A contract for the completion of the Background Report and Concept Management Plan for the East Klwane area was awarded. These will likely be completed by March 31, 1982. A preliminary report from the study on spatial Data Handling Requirements for the Yukon was received. The final report and recommendations are expected before the end of the 1981-82 fiscal year.

The Division provides departmental representation on a variety of land use committees, related boards and panels to ensure that environmental concerns relating to Wildlife and Parks are being met. The Division formed a Habitat Evaluation Section; its one staff member will work closely with wildlife biologists and resource planners in the Department. During this year, the Biological Laboratory was brought under the administration of the Division.

**Plans for 1982-83**

Ongoing projects for the 1982-83 fiscal year include completion of the Dempster Highway Corridor management plan; completion of inventory maps of and the report on the Southern Lake and MacMillan Pass project areas, development of a habitat program and continued involvement in land use activities and evaluation process as they relate to Wildlife and Parks.

The following new projects are expected to begin under the resource inventory program: land use mapping, vegetation mapping in Carmacks-Ross River Corridor, snow depth mapping in the Southern Lakes project, critical sheep habitat identification, and archaeological study within the Southern Lakes area.

*Resource Management Division*

**Responsibilities**

This Division is responsible for managing the wildlife resources in the Yukon and the planning and management of outdoor recreation areas.

**Review 1981-82**

Annual surveys were carried out near Whitehorse to monitor the trends in several sheep and goat populations, which are under great hunting pressure and subject to disturbance. Investigations were continued on a sheep population, many of whose rams have formed horns. The Division is also investigating the distribution and frequency of the mandibular disease "lumpy jaw", found in all Yukon sheep and goat populations. The horns of all sheep shot by hunters were inspected, and analyses of horn growth rates in different areas of the Yukon are being carried out. Inventories were conducted in various areas including the MacMillan Pass area. A joint project to assess the potential impact of the Cyprus Anvil Mine expansion on the local sheep population was carried out with the mining company.

The 1981-82 fiscal year marked the final year of a three-year study on the range use relations and role of the Dempster Highway on the ecology of the Porcupine caribou herd. Normal monitoring activities on the movement of the herd were continued. It is expected that future monitoring work will stress determining the number of caribou in the herd and the rate of reproduction. The Division may also start a co-operative program to determine the "non-harvest" mortality rate. Work continued on studying the home range and movement of the Wernecke caribou herd in co-operation with Pan Ocean Oil Ltd. Studies also began on tracking the movement of caribou in the MacMillan Pass area. In the fall of 1981, work on a comprehensive inventory of moose in the southern Yukon was started. Results in four sub-areas indicated low to medium densities, with generally poor calf survival. Surveys started in March 1982 to delineate late winter habitats. Results indicate that some restrictions are required to ensure future populations of moose.

A number of projects to manage birds of prey were carried out in the Yukon. A raptor survey was carried out in the MacMillan Pass areas as part of a general wildlife inventory in the area. Management projects included re-introducing the peregrine falcon to the area and studies of the population and eggshell thickness of four peregrine falcon groups. The Yukon Government also co-operated with the U.S. Fish and Wildlife Service in a study to chart the movement of bald eagles in relation to the Chilkat River wintering concentration. A co-operative two-year Canadian Wildlife Service/Yukon Government waterfowl study was begun in the MacMillan Pass area. Expanded studies in the Nisutlin Bay waterfowl staging area were done.

Management activities for carnivorous species were limited to investigating trophy hunting of grizzly bears and determining important bear habitat in alluvial riverside habitats. Problems associated with black bears adjacent to placer mining and developed areas continued to increase. Intensive field work on the 3-year marten study at Evelyn Creek was completed in 1981-82. Information was collected on home range, food habitats and habitat selection. A study of beaver movements and population changes was launched in Lapie Lakes and Nisutlin River areas. Beaver and wolverine carcasses were collected and analyzed for age, sex and productivity. An annual questionnaire was circulated to obtain the trappers' response to questions on population levels and trends

associated with the Yukon's fur-bearing animals. The questionnaire will be complemented by fur-bearer inventory studies (winter track-census, and beaver and muskrat aerial surveys) in the Yukon River Basin and North Canol areas. The Division is continually involved in educating trappers, particularly on the subjects of humane trapping methods, pelt preparation and fur marketing. The Division is involved with the development and support of the Fur Institute of Canada, which will likely become operational in September, 1982. Developing humane traps is a primary component of the Institute's mandate. Under the General Development Subsidiary Agreement, the Division planned and monitored the implementation of five projects: Million Dollar Falls Campground, Watson Lake Campground, the expansion of Tombstone Mountain Campground, the Arctic Circle Crossing Point of Interest site and the installation of kitchen shelters at various campgrounds.

During the year, two draft park proposals were completed, one for Fort Selkirk Historic Park and a second for Coal River Springs Nature Preserve. A campground plan was completed for the Carcross area and a draft management plan for Chadburn Lake Park Reserve was completed and rests with the City of Whitehorse for comment. In addition, a safety proposal for Million Dollar Falls was initiated.

#### **Plans for 1982-83**

During the coming year, three projects are being continued — implementation of the Watson Lake Campground and Carcross Campground plans and the planning of safety measures at Million Dollar Falls. It is expected that master planning natural resources inventories will be developed for Kusawa Lake and Coal River Springs. A survey will be conducted on the North Canol Highway to locate suitable sites for campgrounds. Campground planning will be completed at Coal Mine Lake near Carmacks and at sites on the North Canol Highway. Finally, a site plan for expanding the North Klondike Campground will be started.

Plans for 1982 are to continue on all the bird projects noted earlier, excluding the MacMillan Pass raptor study. The Division will also carry out more surveys in the Stewart River drainage, and the southern lakes areas. A bird of prey interpretive program is planned for the Dempster Highway. Grizzly studies will continue and investigations to obtain information on black bears will begin. It is hoped that the moose and caribou projects can be continued, and a study is planned to determine why so few calves are surviving. Inventory of sheep will cover outfitting area 8 in the Wernecke and Anvil Mountains, and investigation into the horn and jaw diseases will continue. Inventories will be carried out in the southern Yukon on fur-bearing animals as part of the Yukon River Basin investigation. The formulation of species management plans will be initiated in 1982-83.

### **Department of Heritage and Cultural Resources**

#### **Responsibilities**

The Department includes the Yukon Archives and Records Services, which covers archival and records management for all Territorial Government departments; the Library Services Branch, which provides service to the Yukon public and to schools; and the Heritage Branch, which includes museums support services, historic sites development, archaeological regulation and an art gallery.

### **Yukon Archives and Records Services**

#### **Review 1981-82**

More than 3800 researchers used material from the Yukon Archives; the photographic technician processed orders for 1600 photographs and negatives. The Archives acquired 147 new primary collections and added 549 volumes and 529 pamphlets to the imprint collection. A major display entitled "Opening Yukon" was presented in November, and films were screened at various events in Yukon communities. An introductory workshop on archival methodology was co-sponsored with the Provincial Archives of British Columbia.

In Records Services, the largest records station was converted to modular shelving, which improved storage efficiency and reduced costs; 4686 new files were raised and 46 564 files were routed to departments. The Records Centre, which was completely reorganized, received 29.8 cubic metres of records and destroyed 64.6 cubic metres. The micrographic unit microfilmed the Workers Compensation Board assessment files, Renewable Resources data sheets and Health Services records for a total of 264 360 images filmed.

#### **Plans for 1982-83**

Plans for the coming year include the completion of retroactive accessioning in the Yukon Archives and the completion of the conversion of records stations to modular shelving. In addition departmental schedules will be revised and a General Records Disposal Schedule will be published.

#### **Library Services Branch**

#### **Review 1981-82**

Library Services Branch has a stock of approximately 150 000 items, and distributed 55 510 items to 59 outlets. The Branch filled 1 939 requests: 542 interlibrary loan requests from outside the Yukon and 1 397 requests from inside. Requests filled for particular books or kinds of books dropped by 9 per cent from last year's total of 2 139. Processing of new books during the year increased by 11 per cent to 23 168. Whitehorse Public Library loans increased by 7 per cent to 90 477, and audio-visual circulation was 9 612, an increase of 16 per cent. Overall circulation of all materials (excluding library materials distributed to schools) reached 139 177. In 1981-82, there were 9 065 registered users of Yukon's public library services.

During the year, the Learning Resources Centre organized its services and produced its first instructional materials catalogue. Teachers throughout Yukon used it to request 19 329 items, which were distributed to schools in the seven-month period ending in March. This joint venture with the Department of Education was a notable success. Staff helped organize a workshop for young authors, along with other events during National Book Week. The position of Territorial Librarian was filled in August after the incumbent resigned in May. Publication of the Branch's newsletter resumed after more than a year's lapse and a well-attended workshop for community library staff and board members was held in March.

**Plans for 1982-83**

When the new administration building opens in Mayo, it will offer improved library services to local residents. Plans for improvement also include upgrading of minimal facilities at Teslin to branch status. It is hoped that preliminary discussions and planning for Yukon Library legislation will also take place during the year. All of these plans depend upon the availability of funds.

*Heritage Branch*

**Review 1981-82**

The four services in this program (museums support services, historic sites development, archaeological regulation and an art gallery) were consolidated in August of 1981. Supervision and design of sites projects under the Canada Yukon Tourism Agreement continued at Fort Selkirk, 30 Mile River, Carcross and Watson Lake, although project management remains with Renewable Resources and Tourism for the length of the Agreement. A director for the program was hired. The Art Gallery began a permanent art collection under an agreement with the Friends of the Gallery.

**Plans for 1982-83**

The Branch is reviewing legislation for protecting heritage resources. A plan and grants program for museums training and support will be developed. Capital Forecasts for sites stabilization and interpretation will be prepared.

**Department of Consumer & Corporate Affairs**

The Department of Consumer and Corporate Affairs operates primarily through five Sections: Corporate Affairs, Consumer Services, Labour Services, Motor Vehicles, and Public Utilities.

*Corporate Affairs Section*

**Responsibilities**

The responsibilities of this Section are to: facilitate credit transactions through registration systems in respect of personal property; formally establish charges and priorities of charges against property; facilitate business development and public protection through incorporation and registration mechanisms for business enterprises; provide a means by which non-business organizations (societies) may pursue their objectives through a corporate entity; and to regulate the trading of securities through registration and disclosure requirements.

**Review 1981-82**

In 1981-82, the Section processed 205 incorporations pursuant to the Companies Ordinance, 128 extra-territorial registrations, 2789 annual reports, and 4113\* documents. In this period, 179 partnerships and trade-names were registered under the Partnership Ordinance, 25 societies and a co-operative association were incorporated, and 373 annual returns and other documents were registered. Finally, 31 registrations were effected for securities issuers, brokers and salespersons.

*Consumer Services Section*

**Responsibilities**

This Section is responsible for protecting consumers and professionals through administration of standards for licensing and professional conduct. It administers Criminal Code provisions covering gambling; provides service to the business community and consumers by helping to resolve disputes and by educating both businesses and consumers about their respective obligations. The Section also provides an information service including metric information for consumers to help them evaluate goods and services in the marketplace. This information service also publicizes consumer-oriented services available from the Government and other sources.

**Review 1981-82**

Licences issued in the 1981-82 fiscal year are as follows: Business — 569; Insurance — 195; Medical Profession — 58; Chiropractic — 3; Dental Profession — 13; Dental Hygienist/Therapist — 11; Legal Profession — 179; Optometrist — 3; Pharmaceutical Chemist — 10; Real Estate — 43; Notary — 47; Lotteries & Games of Chance — 192. The unit also received the following number of complaints and inquiries: Consumer Complaints & Inquiries — 209; Landlord/Tenant Complaints and Inquiries — 350.

*Labour Services Section*

The former Manpower and Labour Branch was re-organized during the year. The Manpower Planning and Womens' Bureau Sections of the Branch were returned to the Department of Education.

Labour Services is involved in the administration of the Occupational Health and Safety, Labour Standards, Fair Practices and Employment Agencies Ordinances/Regulations, and related labour issues.

**Responsibilities**

The responsibilities of the Section are generally to ensure that minimum standards of employment are maintained in the work place; by promoting awareness of and compliance with the Labour Standards Ordinance; to change discriminatory attitudes and promote awareness and compliance with the Fair Practices (Human Rights) Ordinance to prevent wrongful discrimination; to improve occupational health and safety standards in the work place by promoting awareness of and compliance with the Accident Prevention Regulations, Mining Safety and related legislation; to regulate the operation of employment agencies; and to provide resources to Government on other labour issues.

**Review 1981-82**

The Government tabled a Green Paper on Employment Standards and referred it to the Select Committee on Legislation. The Committee conducted public hearings on the proposed amendments to the present Labour Standards Ordinance and reported to the Government in March 1982.

The Government tabled another Green Paper on Occupational Health and Safety and referred it to the Select Committee on Legislation, which conducted public hearings on the proposed amendments to the present Accident Prevention Regulations of the Workers' Compensation Ordinance.

\*Excludes registrations for the last month of 1981-82.

Labour Services Officers received 286 complaints under the Labour Standards Ordinance and responded to approximately 900 enquiries. The Section collected \$128 198.93 in wages; an additional \$57 468.86 in Court Orders for the Payment of Wages remains uncollected at the end of the fiscal year.

To assist Fair Practices Officers in resolving complaints under the Fair Practices Ordinance, an interim, Internal Fair Practices Review Board, was established. The Board investigated seven complaints under the Fair Practices Ordinance. One Order was issued by the Commissioner.

Occupational Health and Safety Officers completed 136 inspections under the Accident Prevention Regulations, answered 120 inquiries, conducted 15 health surveys and contacted more than 750 workers.

#### *Motor Vehicles Section*

##### **Responsibilities**

This Section is responsible for maintaining a vehicle registration and identification system and a driver licensing testing program. It also keeps records of the performance of individual drivers for use by the courts when sentencing. These records are also used by insurance companies for rating purposes and by other agencies, such as the RCMP for program planning. Finally, the Section administers Motor Vehicles legislation in the Territory.

##### **Review 1981-82**

Revenue and licensing statistics for 1981-82 were unavailable at the time of writing. A substantial increase in revenue is anticipated over 1980-81 levels.

#### *Public Utilities Administration Section*

This Section was established in July of 1981 to provide policy, technical, and administrative support to the Yukon Electrical Public Utilities Board and the Transport Public Utilities Board.

##### **Responsibilities**

The Electrical Public Utilities Board regulates the operations of "electrical public utilities" in the Yukon. The Board regularly reviews rate adjustment proposals submitted by the Yukon Electrical Company Limited and the Northern Canada Power Commission on behalf of Yukon consumers. Beyond rate matters, the Board has the power to hear and determine any matter relating to the production and transmission of electricity to the public.

The Transport Public Utilities Board regulates the motor transport industry and may "enquire into, hear and determine any matter or thing respecting provisions of motor transport services to the public".

##### **Review 1981-82**

The Electrical Public Utilities Board received three applications for rate adjustments: one from the Yukon Electrical Company Limited, and two from the Northern Canada Power Commission. A public hearing was called in June to deal with these matters. Arising from the applications, the Board issued four Orders: one to the Yukon Electrical Company Limited, and three to the Northern Canada Power Commission. A second hearing into Northern Canada Power Commission proposals was held in March 1982.



Tanker Truck, Whitepass Gas Depot, Y.T. Photo by Pat Morrow, 1982

The Board began a major review of electricity rate structures during the year. The review is expected to be completed during 1982-83.

The Transport Public Utilities Board held five Public Hearings during the year to deal with 61 applications for operating authority.

The Board has begun to solicit public input as part of its broad review of motor transport policy in the Yukon. This review is expected to be completed early in 1982-83. Any policy or legislative changes that appear necessary as a result of the review will then be adopted or proposed by the Board.

#### **Department of Government Services**

##### *Administration*

##### **Responsibilities**

This Department Co-ordinates general services for the various departments within the Yukon Government and consists of four main Branches: Systems and Computing Services, Supply Services, Public Affairs, and Property Management.

##### **Review 1981-82**

The Department assumed responsibility for Property Management in May 1981. (This responsibility had previously rested with the Department of Highways and Public Works.)

## *Systems and Computing Services Branch*

### **Responsibilities**

The Branch provides a systems analysis and design service as well as an electronic information processing service to all corporations and government departments. The branch also co-ordinates related activities which utilize non-government resources.

### **Review 1981-82**

Major activities included converting existing computer systems to the new central installation, implementing a new payroll system, installing a Human Resources Client Index system, developing a Personal Property Security Registration and offering more computing services to end users. The systems group was expanded to provide more management systems services to the departments. Some word processing capability was introduced, as a first step in implementing the office automation plan.

### **Plans for 1982/83**

This Branch will continue to provide a systems-oriented management consulting service and computing services to end users. It will also work to reduce the project backlog and co-ordinate word processing training.

## *Supply Services Branch*

### **Responsibilities**

The Branch provides a pool of resources to all government departments and Crown corporations, encouraging greater efficiency and economy of scale in areas such as purchasing, capital asset control, transportation, communications (Mail services and telex/dex), printing services, warehousing, safety and security.

### **Review 1981-82**

The Central Transportation Agency implemented a reservations section that processes all government travel requests for scheduled air service, hotel accommodation and vehicle rentals. A transportation system (Handybus) was implemented in the Whitehorse area especially for elderly and disabled persons.

During the year, purchase orders were issued for \$17.8 million; service contracts for \$11.4 million and Local Purchase Orders for \$0.9 million. More than 73 per cent of all purchases were made through Yukon businesses.

The auctions of surplus material returned \$149 195 to the Government. Throughout the year, 22 such auctions were held.

With Central Transportation co-ordinating government vehicles, the utilization of the fleet increased by 400 per cent.

Upgraded printing facilities currently produce 9 500 000 copies of printed material for the various government departments. The first edition of a new Yukon Gazette was published.

The Central Stores Warehouse processed 4 108 departmental requisitions for a dollar value of \$283 170 from an inventory of 1 100 items.

A security and safety component was transferred to Supply Services during the year, and it continued its safety education program including training programs in first aid, winter survival, defensive driving and fire extinguisher drills. It also continued its inspections of government establishments. During the year, a marine safety manual was developed for ferry operations in the Yukon. The Emergency Measures Organization offered assistance in a local flood at Rock Creek involving 60-70 residents. It also responded to other emergencies, such as flooding in the Carcross community and the destruction of the school in Old Crow, which resulted in a brief electrical power outage in that community.

### **Plans for 1982-83**

During the upcoming year, the Branch plans to establish a schedule for computerizing its inventory and asset control functions. Printing services plans to extend its graphics and design consulting services to all departments. Safety and Security will develop an emergency communication package to improve the ability of communities throughout Yukon to respond to emergencies.

## *Public Affairs Bureau*

### **Responsibilities**

The Public Affairs Bureau provides a central, in-house service to all government departments, Crown corporations and agencies by providing public information and education about government programs and activities. These services are provided through three Sections: Information Services, Photography and the Inquiry Centre.

### **Review 1981-82**

The Bureau is committed to improving the Government's information programs. Accordingly, it assumed more responsibilities and significantly increased the level and quality of public information programs. Its responsibilities now include preparing public communications strategies as a required attachment to all Cabinet submissions on policy and legislation. It also produces numerous publications on government programs and activities, including a monthly government newsletter.

In 1982-83, the Bureau produced more than 300 press releases, several feature articles, a bi-monthly employee newspaper, audio/visual presentations and a quarterly government directory. The Bureau also handled the production and placement of most government advertising, including several multi-media campaigns, and helped to developed exhibits and displays.

A cost-sharing agreement was reached with the Government of Canada for the operation of a public Inquiry Centre, which handled 120 000 telephone, mail and counter inquiries. In 1981, the Public Affairs Bureau hosted the National Government Information Director's Conference in Whitehorse and the Inquiry Centre assumed responsibility for the sale and distribution of government ordinances and regulations.

### **Plans for 1982-83**

In the upcoming year, the Bureau plans to sponsor a series of in-house media relations seminars for government employees and will continue preparing a guideline manual for use of the Yukon Government Wordmark. The Bureau also plans to re-assess and update the central photographic library, review the effectiveness of government advertising in relation to the media being used, and continue its ongoing activities at the present level.

### **Property Management Branch**

#### **Responsibilities**

This Branch acquires and allocates office space for all government departments throughout Yukon (with the exception of Yukon Housing and Yukon Liquor Corporation). It also provides building maintenance, janitorial and security services. Property Management co-ordinates and assesses departmental requests for additional space or alterations to existing accommodation. The main objective is to provide suitable office accommodation and ensure the maximum use of government-owned and leased premises.

#### **Review 1981-82**

Custodial duties were re-organized; two person years were cut from the staff. The Branch signed a lease agreement for the new Inter-governmental Affairs office in Ottawa. New office space was provided for the Commissioner and the administrative staff of the Department of Heritage and Cultural Resources.

### **Plans for 1982-83**

Plans for some renovations with the Administration Building have been discussed for the 1982-83 year. This will mean relocating some departments as well as creating private office space for the MLA's. A conference complex is also being planned.

### **Yukon Workers' Compensation Board**

#### **Responsibilities**

The Workers' Compensation Board administers the Workers' Compensation Ordinance and adjudicates all matters arising under that Ordinance. The board guarantees that compensation and pensions awarded to injured workers or their dependants be paid for as long as they are entitled to receive these benefits.

In co-operation with the Yukon Department of Justice, the Workers' Compensation Board administers the compensation under the Victims of Crime Ordinance, to ensure that victims of crime or their dependants who are faced with financial difficulties as a direct result of a criminal incident receive any compensation to which they are entitled.

#### **Review 1981-82**

A total of 2018 claims were reported during 1981, compared with 1939 in 1980. Increases in the amounts of compensation resulted from Section 79 of the Ordinance. Section 79 increases the amount of compensation in accordance with changes in the Consumer Price Index. The amount of the increase at January 1, 1981, was 12.5 per cent. During 1981, 1963 employers were registered, compared with 1782 in 1980.

### **Yukon Housing Corporation**

#### **Responsibilities**

The Yukon Housing Corporation develops, provides and operates various housing projects and programs throughout the Yukon Territory. The Corporation's client group extends to many segments of the population, including low and modest income individuals, families, senior citizens and staff of the Yukon Government.

The Yukon Housing Corporation has a commitment to encourage private home ownership.

#### **Review 1981-82**

In 1979-80, all of the Yukon Housing Corporation's community and staff housing units were surveyed to assess their insulation. A five year insulation retrofitting program for the Corporation's housing stock resulted from the survey. In this second year of the program (1981-82), a total of 62 housing units had their insulation upgraded. As well, the Yukon Housing Corporation built two highly energy-efficient, detached staff houses in Haines Junction, reflecting its commitment to encouraging energy conservation.

On April 1, 1981 the Corporation, upon direction from the Yukon Government Cabinet, discontinued provision of Staff Housing to Yukon Government employees in Whitehorse.

### **Plans for 1982-83**

Plans are underway to build a 22 suite, energy-efficient staff apartment in Faro. This building, consisting of 17 two-bedroom and 5 one-bedroom units, should be available for occupancy in December of 1982. As well, the third year of the insulation retrofitting program has been planned.

### **Yukon Liquor Corporation**

#### **Responsibilities**

The Yukon Liquor Corporation regulates imports and distributes and retails alcoholic beverages within the Yukon. It ensures that the requirements of the Liquor Ordinance, the attendant regulations and the goals and objectives of the Corporation are met. It also issues, cancels, and suspends liquor licences, enforces the Ordinance, carries out inspection and deals with all other matters relating to controlling the sale of liquor. Unlike government departments, the mandate for a Crown corporation is laid down through legislation, making the Corporation responsible to the legislature for its operation. The Auditor General of Canada audits the Yukon Liquor Corporation.

The Board of Directors, appointed by the Government, is the Corporation's legal entity. Board members are part-time appointees and reside in different parts of the Yukon (Mayo, Haines Junction, Watson Lake and Whitehorse). The Board of Directors has assumed all legislated responsibilities and is involved in corporate business activities, drafting by-laws and setting budget policies. As the Crown corporation is under the joint control of the government and the Board of Directors, the Chief Executive Officer directs, supervises and controls the general direction of the Board on behalf of the Government. This arrangement allows for visible separation from day-to-day control by Government and frees the Board of Directors from political pressure, while allowing the Government to remain accountable to the public. The Minister responsible for the Corporation answers to the legislature for the corporate mandate received from that body and to the Government for matters involving major policies.

## Review 1981-82

### Administration

New and amended regulations were passed that opened Board meetings pertaining to licences to the public. These regulations also prohibited the purchase of off-sales liquor on credit except in special circumstances; and authorized the Board to regulate the hours of sale for an off-premises liquor licence.

### Accounting

Technology and electronic management is rendering manual computation of stock and sales obsolete, particularly at the retail level. The Corporation has begun to introduce computerized cash registers to its liquor stores and the Central Warehouse. The Whitehorse Store, the first to use the Point of Sale System, experienced a smooth transition from a manual to a computer-based system. Thorough training of staff greatly contributed to the successful change-over.

### Operations

The Head Office and Central Warehouse are located in one building in the Marwell area. A total of 43 staff members work at Head Office and operate the Central Warehouse and six liquor stores. Liquor stores are located at Whitehorse, Haines Junction, Dawson, Mayo, Faro and Watson Lake. The retail sales of the Corporation function like a private retail enterprise. All liquor imported into the Yukon is received at the Central Warehouse for transfer to the six stores. As well, licensees in Whitehorse and highway lodges are served from the Licensed Outlet Store within the Warehouse. Retail prices are identical in all liquor stores and the Central Warehouse. It is the government's policy (regulated) that licensees situated outside a 25 mile radius from a liquor store or warehouse receive prepaid shipments in order to help alleviate higher costs in isolated areas.

Canadian liquor products are ordered frequently throughout the year and arrive regularly by White Pass ship and rail, allowing maximum turnover of stock. Overseas products are ordered from more than twenty countries. These items are ordered in large quantities twice annually, with intermittent orders as required, in order to take full advantage of containerization at the European docks.

### Liquor Sales Throughout the Yukon, including Surcharge

	1980-81	1981-82
Spirits	\$ 5 984 190	\$ 6 717 395
Beer	5 414 958	6 720 368
Wine	1 917 044	2 026 722
Total	\$13 316 192	\$15 464 485

A total of 7 864 tons of liquor was handled and 715 154 dozen empty beer bottles were returned. Liquor consumption amounted to 884 962 gallons.

## Licensing and Inspection

Liquor Licences Issued	1980-81	1981-82
Liquor Cocktail Lounge	45	42
Beer Tavern	10	10
Dining Room	37	39
Restaurant Beer and Wine	35	32
Liquor Off Premises	66	56
Beer Off Premises	31	31
Club Liquor	9	11
Beer Canteen	4	4
Special Liquor	5	5
Aircraft Liquor	2	2
Room Service Liquor	19	18
Mess Liquor	2	2
Total	265	252
Special Occasion Permits	526	500
Reception Permits	116	159

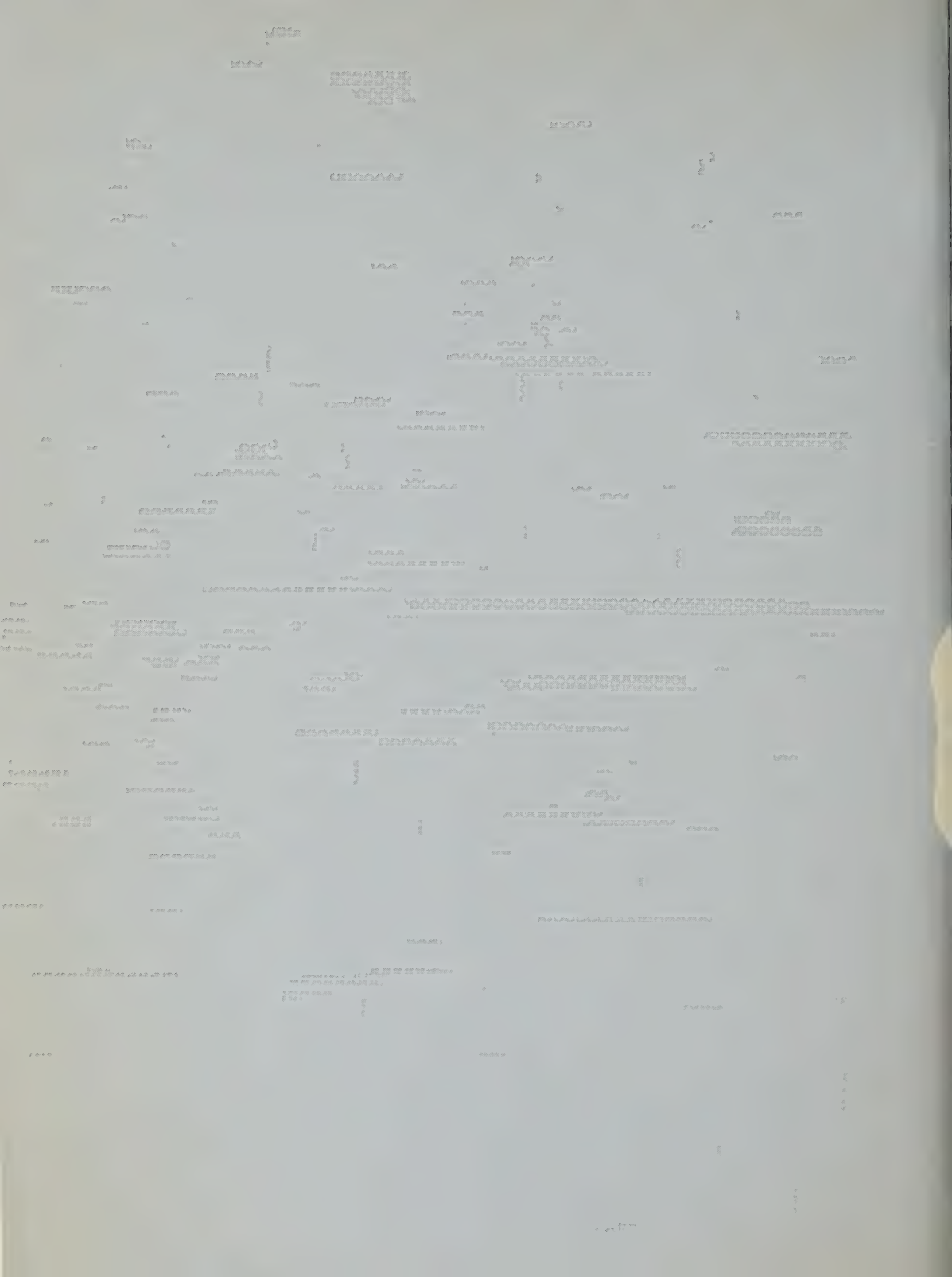
There were eleven applications for new licences. Four liquor licences were suspended during the year. A total of 1 267 inspection visits were made to licensed establishments and 659 liquor permits were issued to the public.

### Summary of Direct Northern Expenditures (000's)

	\$	%
Total Forecast 1981/82	146 488	100.0
<i>Expenditure by Northern Objective:</i>		
Quality of Life	77 894	53.2
Economic Growth	31 988	21.8
Evolution of Government	15 608	10.6
Administration and Support	14 151	9.7
Protection of the Environment	4 111	2.8
Leisure and Recreation	2 035	1.4
Social and Cultural Development	701	0.5









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# Government Activities in the North 1982-1983

## Annual Northern Expenditure Plan 1983-1984

Published under the authority of the  
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Government  
Activities  
in the  
North  
1982-83

Annual  
Northern  
Expenditure  
Plan  
1983-84

# Introduction

Over the past number of years, the Department of Indian Affairs and Northern Development has published annually *Government Activities in the North (GAIN)*, a narrative review of the northern activities of federal departments and agencies as well as those of the territorial governments.

A companion publication, *Annual Northern Expenditure Plan (ANEP)*, a compilation of planned, forecast and actual expenditures related to those activities detailed in *GAIN* has also been produced.

Regular readers will recall that the 1981-82 *GAIN* included, at the end of each departmental and agency section, the total forecast (1981-82) expenditure by that organization as well as a breakdown by Northern Objective of that spending. This was the first step in an evolutionary process designed, in the long term, to combine the information and data contained in *GAIN* and *ANEP* respectively into one publication, and thus increase the usefulness of the information and data provided.

Accordingly, two major steps have been taken, the results of which are evidenced in this publication. First, *GAIN* 1982-83 and *ANEP* 1983-84 have been combined into one volume, and second, the information in the *GAIN* section has been rearranged so that each agency's<sup>1</sup> activities have been grouped according to the Economic Function<sup>2</sup> under which those activities are reported in the *ANEP* section of the document.

To relate spending by economic function (*ANEP*) to activities of any given agency, the figures to be used for 1982-83 activities must be sought in the column headed *1982-83 Forecast of the Economic Function Table* on page 14 of the *ANEP* Section.

<sup>1</sup> The term "agency" (when not otherwise modified) includes federal government departments, agencies and crown corporations, and the governments of the two territories.

<sup>2</sup> The Economic Functions are defined on page 8.

Government  
Activities  
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North  
1982-83

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# Economic Functions



# Definitions of the Economic Functions

## 1 Education

All activity expenditures on primary, secondary, and university schooling but excluding adult and occupational training.

## 2 Health

All activity expenditures directly related to protecting and improving human health, primarily of a medical-dental nature.

## 3 Welfare

Activity expenditures consisting of payments to individuals for maintenance of income, social assistance and improved housing.

## 4 Transportation

Activity expenditures which relate directly to the regulation, construction, operation, maintenance or up-grading of transportation services (i.e. the movement of goods and people).

## 5 Communication

Activity expenditures which relate directly to the regulation, construction, operation, maintenance or up-grading of communication services (e.g. postal services, radio and television broadcasting).

## 6 Economic Development (Human)

Activity expenditures made to improve an individual's opportunities to increase his income by the improvement of his labour skills or by improving the efficiency of the labour market. Examples of expenditures would be occupational training programs and labour market surveys.

## 7 Economic Development (Other)

Activity expenditures made for the prime purpose of developing the primary, secondary, and service sectors of the northern economy. Typical activities would be tourism, mineral development and incentives, and game management.

## 8 Defence

Activity expenditures made to ensure the preservation of Canadian sovereignty.

## 9 Local Government

Activity expenditures for the establishment of effective and responsible political institutions at the municipal level.

## 10 Research (Short-Range)

Activity expenditures of a research nature, where the application of the results is expected to take place within the reporting period plus two years.

## 11 Research (Long-Range)

Activity expenditures of a research nature, where the application of the results is not expected to take place within the reporting period plus two years. (Note that no figures relating to this function are included in this document. A special table detailing these expenditures is, however, included in the detailed ANEP document available on request).

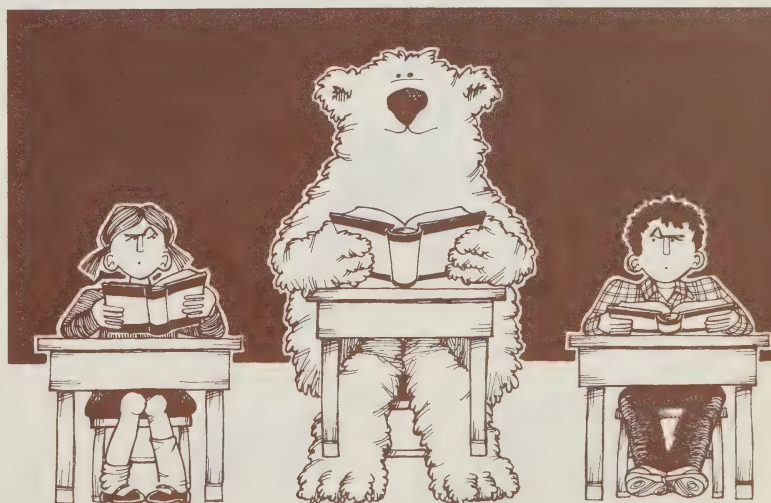
## 12 Culture and Recreation

All activity expenditures on parks, recreation and cultural services.

## 13 General Government Services

All activity expenditures on services which cannot be assigned to any of the above functions. Examples would be administration of justice, personal and property protection, meteorological information and the like.

# Education



# Department of Indian Affairs and Northern Development Secretary of State

## Indian and Inuit Affairs Program

### Yukon Region

#### *Review 1982-83*

Elementary and secondary education programs in this Region are the responsibility of the Yukon Government. However, DIAND's Indian and Inuit Affairs Program is directly involved in post-secondary and adult education, and in occupational skills training programs.

In 1982-83, the Department sponsored 18 students, allowing them to attend colleges and universities. The 18 students represent a decrease of 46 per cent from 1981-82.

Yukon Hall, the Region's only student residence, provided accommodation to students from other communities who were attending in-school programs in Whitehorse.

The Department contributed \$257,000 to the Council for Yukon Indians in 1982-83 to fund CYI programs in adult education and curriculum and cultural development.

#### *Plans for 1983-84*

The Education Program will transfer responsibility for providing occupational skills training to the Resource, Economic and Employment Development Program. It will continue to provide other post-secondary and adult education services.

## Official Languages in Education

### *Responsibilities*

The Program provides assistance to provinces and territories to develop and maintain minority official language education and instruction in the second official language.

#### *Review 1982-83*

At the request of the Territorial Governments, the program continued to provide financial assistance to the official languages programs of both Departments of Education. The total allocation was \$295,000. Funding will allow the N.W.T. to provide study fellowships to post-secondary students. It will also enable the N.W.T. to pay for full-time monitors to assist French language teachers, provide text books and other resource materials for teaching French and pay for in-service training and bursaries for French language teachers.

In the Yukon, federal assistance for French language programs enabled the provision of French immersion classes in Whitehorse, the salary for a full-time co-ordinator of French courses, full-time French language monitors, and bursaries to train French language teachers. Funding also allowed the Yukon to expand its in-service training and career development programs for teachers and to provide bursaries for post-secondary students. The bursaries will enable them to take summer immersion courses in an official language.

# Health



# Health and Welfare Canada

## Medical Services Branch – Yukon Region

### Role

The role of Northern Health Services is to deliver acute care and preventive health programs to communities in Yukon. The Branch resembles a Territorial Health Department – the Branch Program Medical Officer acting as the Chief Medical Officer of Health for Yukon.

Northern Health Services facilitate clinical visits by private physicians and dentists to outlying communities. The Medical Services Branch and the Yukon Territorial Government share the costs of providing health care. The latter administers the Health Care Insurance Plan and contributes to the capital and operating costs of the health care system through a cost sharing formula.

### Facilities

The Branch operates one general hospital, three cottage hospitals, two nursing stations, ten health centres, and four health stations.

### Activities Review, 1982

The Branch's key health programs include Child and Maternal Health, Tuberculosis Control, Communicable Disease Control, School Health, Dental Health, Environmental Health, Mental Health, Health Education, Public Service Health, the National Native Alcohol and Drug Abuse Program (NNADAP) and, finally, Hospital Services.

During 1982-83, the Dental Health Program emphasized bringing services to remote communities. Private sector dentists located in Dawson City, Faro and Whitehorse and ten dental therapists located in Whitehorse and Watson Lake provide these services.

During 1982-83 the Branch continued its membership on the Yukon Water Board and provided advice aimed at preventing contamination of municipal water supplies.

The Branch also continued to encourage and assist medical specialists in Paediatrics, Orthopedics, Dermatology, Ophthalmology, Rheumatology, Oncology, Otolaryngology, and Internal Medicine to visit Yukon and provide clinical services in Whitehorse.

The Branch continued the Health Liaison Program with the Council for Yukon Indians. This Program helps to improve the general health of the Indian people.

The Mental Health Program continued to promote community mental health awareness and improved the ability of communities to respond to mental health problems and related social problems. During 1982-83, a private psychiatrist set up a full-time practice in Whitehorse.

A full-time Occupational Health Nurse strengthened the Public Service Health Program this year.

Funding for the National Native Alcohol and Drug Abuse Program was increased, and new programs were added. The community-based NNADAP Advisory Board went through a number of "growing pains" during the year, but it has now begun to carry out its new duties and responsibilities. Currently, the Branch is carrying out 14 NNADAP projects in Yukon.

A comprehensive training program for Alcohol Workers, Community Health Representatives, and Band representatives was launched. In 1981, the Branch hired a NNADAP Consultant to work on the Program. This year (1982-83), a NNADAP Co-ordinator was added to help with the Program. In keeping with its intent, all projects under the Program are being conducted at the Community level.

The Whitehorse General Hospital is an accredited, 120 bed, acute care facility. It provides services in Medicine, Surgery, Paediatrics, Obstetrics, Gynaecology, Psychiatry, Pharmacy, Radiology, and Physiotherapy, as well as Laboratory and Emergency services. In addition, the Hospital's diagnostic capability was much improved with the installation of an ultrasound unit. For 1982-83, the Hospital extended its Parental Nutrition and Home Dialysis Programs, and the Dietary Department continued to provide consultative services to the Yukon Correctional Institute and to MacCauley Lodge.

Following an accreditation survey, the Hospital received a two-year certification.

### Maintenance and Construction

During the 1982-83 year, a number of projects were carried out involving either new construction, or renovations, repairs and improvements to existing buildings. The list below indicates some of the work carried out to improve the health care facilities in the Yukon.

- A nurses' residence containing two apartments was built at Carmacks.
- A new Health Centre at Ross River was completed.
- The heating systems at Faro and Watson Lake Cottage Hospitals were overhauled.
- A program to upgrade Mayo Cottage Hospital to meet Fire and Safety codes was completed.
- Improved fire protection systems were installed at Medical Services facilities in Mayo, Dawson City and Watson Lake.

Extensive renovations were completed at Whitehorse General Hospital. These included new emergency exits for the Emergency Department and the Physiotherapy area, a major upgrading to the boiler and control system of the steam plant, the paving of access roads and the addition of more parking spaces. Both the interior and exterior of the Hospital were painted. The cafeteria, the Nursing Station and storage areas on the Surgical Ward were remodelled. Finally, the Boardroom and Clergy Office were constructed, and the Intensive Care Unit was renovated.

## Medical Services Branch – Northwest Territories

### Role

In the Yukon Territory, the Medical Services Branch is responsible for providing acute treatment care and preventive health services to the population of the Northwest Territories, except in Yellowknife, Hay River and Fort Smith. In these centres, the Territorial Department of Health provides acute treatment care. That Department is also responsible for administering the Territorial Hospital Insurance Services Plan, the Territorial Health Care Plan and supplementary health programs. The N.W.T. Government, under a contractual agreement, provides the Medical Services Branch with support services in finance and administration.

### Facilities

In the Northwest Territories, the Branch operates four hospitals – Frobisher Bay General (35 beds), Inuvik General (35 beds), and the cottage hospitals at Fort Simpson and Rae-Edzo. In addition, the Branch operates 39 Nursing stations, Health Centres and a number of Health Stations. The Nursing Stations are particularly well equipped. They provide treatment and public health services through a staff of Nurse Practitioners who, apart from their basic RN qualifications, have taken training in public health and midwifery. They also have expertise in diagnosis and treatment. Physicians from the Base Hospitals visit these Nursing Stations regularly.

A number of universities, including McGill, Manitoba, Alberta, and the Clarke Institute of Psychiatry in Toronto, provide specialist services.

All organized communities in the Northwest Territories received dental services through private practitioners, government dental staff and dental therapists. Dental therapists live in one community, from which they service several "satellite" communities.

A team of nine Environmental Health and Surveillance Officers based in Frobisher Bay, Inuvik, Hay River, Yellowknife and Churchill, Manitoba work closely with other federal and territorial units, both to identify environmental conditions that could cause health problems, and to correct them.

### Activities Review 1982-83

In 1982-83, the administration of Frobisher Bay General Hospital and its associated services were transferred to the N.W.T. Department of Health. In turn, the Department delegated the operation of the Hospital to a Regional Board of Management. This transfer resulted from two years of negotiations with the Inuit Tapirisat of Canada and the Territorial Department of Health. The Frobisher Bay General Hospital was re-accredited in August 1981.

Another major project, concluded in 1982, was the transfer of the Fort Smith School of Dental Therapy to Prince Albert, Saskatchewan. The school now operates independently, reporting directly to Branch Headquarters in Ottawa.

The Inuvik General Hospital Board assumed increased responsibility for operating the hospital. A restructuring of the Advisory Board was completed in March 1982. The staffing of the Inuvik General Hospital is now essentially complete, with the hiring of a Medical Programs Officer, a Zone Finance and Administration Officer and a Hospital Administrator.

The Chronic Disease Unit, previously located in Edmonton, has been moved to Yellowknife. The unit consists of a Chronic Disease Officer and support staff.

The health implications of large-scale resource development projects, particularly in the Western Arctic, are of concern to the Branch. The N.W.T. Region is working closely with the Beaufort Sea Office of the Department of Indian Affairs and Northern Development and the Beaufort Sea Environmental Assessment Review Panel, which has completed its report and is holding hearings.

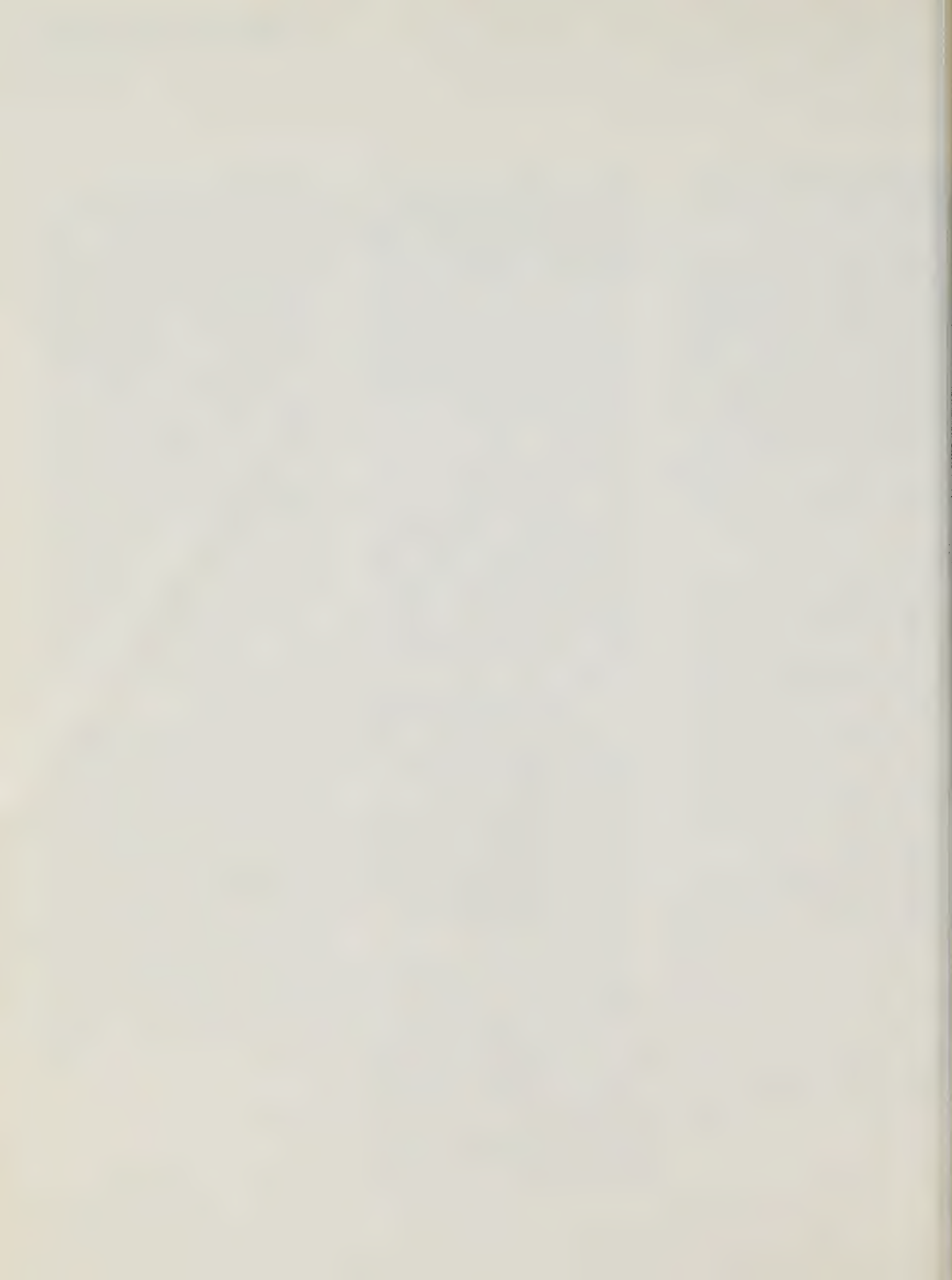
Preliminary studies have been completed on the future role of the Inuvik General Hospital and its relationship to possible resource development projects. The Task Force on Health Services Delivery and Policy Co-ordination is reviewing recommendations from various health studies carried out in the Central Arctic and Keewatin. The N.W.T. Department of Health, Department of Indian Affairs and Northern Development, and the Medical Services Branch are represented on the Task Force, which is due to report its findings in 1983.

The Medical Services Branch has continued to encourage Native people to become involved in delivering health services. For example, a number have been trained in health-related areas in the Northern Careers Program, and a Liaison Worker for the Dene Nation in Yellowknife has been hired. Native people are represented at Zone Directors' Conferences, and they are encouraged to participate in operational planning and management decision making.

The National Native Alcohol Abuse Program has been decentralized to the regional level, and new systems for measuring its effectiveness and efficiency are being implemented.

A major highlight in 1982 was the construction of "Arctic Buildings" to house health facilities for the Branch. These new buildings have been designed for Arctic conditions and will be monitored during 1983 to assess their fuel efficiency and maintenance requirements.

In conclusion, the N.W.T. Region of Medical Services Branch is developing comprehensive plans to improve the health care it delivers to its client population. The key elements of these plans include new or improved facilities, transferring responsibilities for health care to local and regional bodies and, finally, developing methods of delivering health care that relate more closely to the needs of the population of the North.



# Welfare



# Canada Mortgage and Housing

## Responsibilities

Canada Mortgage and Housing Corporation (CMHC) is responsible for housing and other programs under the National Housing Act. It insures residential mortgage loans made by approved lenders and provides direct financing to the Territorial housing corporations and private non-profit organizations for building new houses and rehabilitating existing ones. The Branch offices in Yellowknife and Whitehorse administer the Corporation's day-to-day activities.

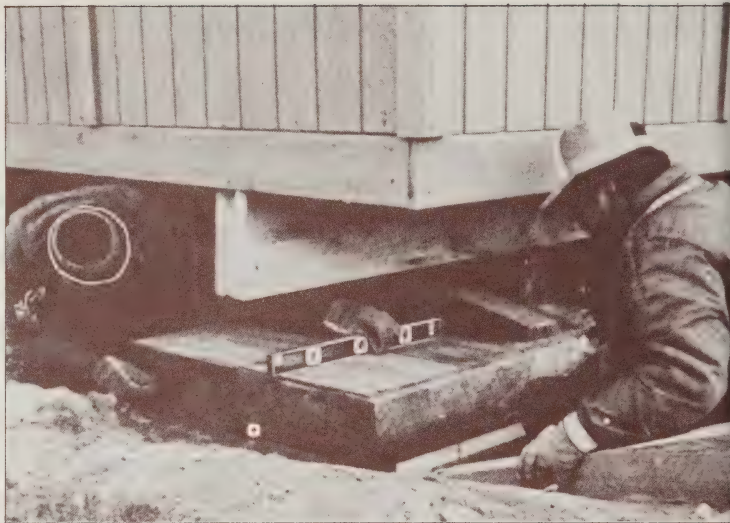
## Review 1982

### Northwest Territories

During 1982, CMHC was involved in financing and either building or rehabilitating 678 housing units in the Northwest Territories. CMHC financed 342 of these units directly through cost-shared programs with the Northwest Territories Housing Corporation (NWT HC). Of the 342 houses, 105 were new and 237 were rehabilitated and are part of various programs that provide subsidized rental housing in many smaller and isolated communities in the Territories. CMHC funding for these programs totalled \$22.4 million. CMHC and NWT HC will also share the operating subsidies for these units in the years to come.

Through CMHC's Co-operative and Non-profit Housing Programs, 56 new rental units were started in 1982. Construction began on a 50-unit co-operative project in Yellowknife, and a six-unit senior citizens' non-profit project was launched in Tuktoyaktuk. CMHC provided \$5.8 million of mortgage insurance for the two projects and will subsidize them annually to a maximum of \$787 300.

In addition to insuring the mortgages for these projects, CMHC insured mortgages on 98 new and existing owner-occupied houses and on 27 rental properties. In 1982, CMHC issued \$13.7 million in mortgage insurance. Another 18 households received direct mortgage financing after being turned down by approved lenders.



Foundation Retrofit on Webber Housing Units in Rankin Inlet, N.W.T. The purpose of the retrofit is to strengthen and stiffen the foundations and support systems of the houses.

- The leveling of the pad

Under its rehabilitation programs, CMHC funded the rehabilitation of 128 units for a total expenditure of \$637 000. CMHC funded 27 of these units directly through the Residential Rehabilitation Assistance Program (RRAP). On behalf of CMHC, the NWT HC funded 49 units under the Emergency Repair Program (ERP) and another 52 under the Enriched Emergency Repair Program (EERP). The Canadian Home Insulation Program (CHIP) provided another 45 grants totalling \$45 527 to homeowners to help them upgrade the insulation in their houses.

The budget speech of June 28, 1982 announced certain programs to stimulate the housing industry. The most active program in the N.W.T. was the Canadian Homeownership Stimulation Plan (CHOSP). Under this federal program, a qualifying purchaser of a new or existing home received a \$3 000 grant. During 1982, 142 such grants totalling \$426 000 were committed under CHOSP in the N.W.T.

In 1982, CMHC and NWT HC jointly sponsored two district housing conferences - one in September in Rankin Inlet for the Keewatin area, and another in December in Cambridge Bay for the Kitikmeot area. These conferences brought together people from the small communities who are involved in managing public rental housing. The meetings provided an opportunity to exchange information, identify problems and propose solutions with a view to improving housing conditions and property management techniques.

# Department of Indian Affairs and Northern Development

Yukon

During 1982, the Whitehorse Branch of CMHC insured \$4.9 million in residential mortgage financing for the construction or purchase of 117 housing units.

In 1982, CMHC also approved two applications amounting to \$10 000 each for Start-up Funding for a Native non-profit housing project and another private non-profit project. The two proposed projects will be considered for capital funding in 1983.

Using the mechanism of the Public Non-profit Program (Section 56(1) of the National Housing Act), four units were committed for a project sponsored by the Yukon Housing Corporation with a maximum annual assistance level of \$31 000.

The Corporation also provided direct capital for 25 units under Section 59 Non-reserve Rental as well as subsidies on these units under the Private Non-profit program.

During 1982, CMHC and the Yukon Housing Corporation agreed to share equally in the cost of providing a subsidy under Section 44.1(a) Rent Supplement on eight units.

In 1982, the Council of Yukon Indians (CYI) received approximately \$96 000 from CMHC as a Sustaining Grant. This Grant will facilitate the development of local systems for providing housing. Another \$1 000 was made available to CYI for client training and to train native persons to deliver housing programs through their own organizations. In addition, the Council received \$80 000 through the Emergency Repair Program. These funds will finance emergency repairs urgently needed to bring 39 rural housing units up to reasonable health and safety standards.

CMHC has provided the Teslin Indian Band and the Council for Yukon Indians with \$162 000 in funds during 1982 to repair 36 housing units under the Emergency Repair Program. About \$149 000 of these funds is forgivable. During 1982, CMHC also provided forgivable loans under the Canada Home Renovation Plan (HRP) totalling \$41 000 to 22 homeowners in the Yukon.

Throughout the year, CMHC approved 303 grants totalling \$909 000 under the Canada Homeownership Stimulation Plan. Most of the \$3 000 grants went to first-time buyers of existing homes.

## Total Activity Approved — 1982

	No. of Units	Amount \$ 000
<i>N.W.T.</i>		
New and Existing Rehabilitation and Repair	597	37 700
	137	1 054
<i>Yukon</i>		
New and Existing Rehabilitation and Repair	182	6 320
	38	186

## Indian and Inuit Affairs Program

### Social Development Program

#### Review 1982-83

In 1982-83, significantly higher expenditures occurred in the Income Maintenance Program. Severe economic conditions in the last year — in Band communities specifically, and throughout Yukon generally — were largely responsible.

In the area of family services, the Department worked with the Government of Yukon to renegotiate the 1961 Child Welfare Agreement between the federal and Territorial Governments.

The Social Development Program also encouraged Yukon Indians to become involved in the child welfare system, and the Government of Yukon plans to review and amend the Child Welfare Ordinance.

#### Plans for 1983-84

In the new year, the Social Development Program will provide consultation and advisory services to Bands in community social planning. It will also continue to provide basic skills training to Band social service workers and to develop procedural manuals for Band-administered social development programs.

# Employment and Immigration Canada

Employment and Immigration Canada (EIC) provides services to the Northwest Territories through Canada Employment Centres (CECs) in Yellowknife, Hay River, Inuvik and Frobisher Bay. Full-time sub-offices are maintained at Fort Simpson, Fort Smith and Rankin Inlet. An Employment Development Branch office in Inuvik also administers a variety of programs in the N.W.T.

The Whitehorse-based staff concentrates on maintaining and improving EIC's services to all areas of Yukon. Outreach workers complement this work and provide employment services in several areas.

In the Northwest Territories a full range of unemployment insurance programs is available from both Frobisher Bay and Yellowknife. From April 1, 1981 to March 31, 1982, 3 759 claims were received from N.W.T. residents. An estimated 4 000 claims were received in the 1982 calendar year.

From April 1, 1981 to March 31, 1982, 4 127 applications for Unemployment Insurance were received from residents of Yukon. In the 1982 Calendar year, an estimated 6 000 were received.

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# Health and Welfare Canada

## Income Security Programs Branch

### Family Allowances

Health and Welfare Canada pays monthly Family Allowances on behalf of children under 18 who are maintained by a parent or guardian who lives in Canada and is subject to Canadian Income Tax. In March 1983, the Department paid allowances on behalf of 7 193 children in the Yukon and 19 761 children in the Northwest Territories.

For the 1983 calendar year, the rate payable in the Yukon and Northwest Territories is the federal rate of \$28.52 per month.

A program known as the Child Tax Credit started in January 1979. It is administered through the Income Tax system and provided an annual benefit of up to \$343 on behalf of each eligible child for the 1982 taxation year.

### Old Age Security

The Old Age Security Act authorizes a non-contributory program that provides a monthly benefit to all people 65 years of age and over who can satisfy certain basic residence requirements and who are Canadian citizens or legal residents of Canada.

The Act also provides a Guaranteed Income Supplement to pensioners living in Canada who have a limited income. Again, where income is limited, the Spouse's Allowance is another benefit payable to the spouse of an Old Age Security pensioner. In March 1983, the basic monthly Pension was \$254.13.

The maximum monthly supplement was \$255.13 for a single or married pensioner whose spouse was not receiving either the Pension or a Spouse's Allowance, and \$196.70 each for a married couple.

In March 1983, 740 persons were receiving the Old Age Security Pension in Yukon. Almost half of the recipients (36) received a supplement. In the Northwest Territories, 1 290 people were receiving Old Age Security Pensions, and of these 1 038 were receiving a supplement. There were 22 recipients of Spouse's Allowance in Yukon and 70 in the Northwest Territories.

The Family Allowances and Old Age Security programs are administered in Yukon and the Northwest Territories from the Regional Income Security Programs Office in Edmonton, Alberta.

### Canada Pension Plan

The Canada Pension Plan, in existence since January 1, 1966, is a compulsory, contributory, earnings-related plan. Together with the Quebec Pension Plan it covers virtually all employed persons between the ages of 18 and 70 in Canada. The maximum retirement pension in 1983 is \$345.15 per month.

A Disability Pension is payable to contributors suffering from severe or prolonged mental or physical disability. It consists of a fixed monthly amount of \$78.60 plus 75 per cent of the contributor's retirement pension. The maximum monthly disability pension in 1983 is \$337.46.

## Beneficiaries by the type of benefit and by Territory

### March 1983

Territory	Retirement Pensions	Disability Pensions	Children's Benefits	Death Benefits	Surviving Spouse's Pension	Other
Yukon	403	48	13	8	216	
N.W.T.	266	26	40	11	187	

# Veterans Affairs Canada

## Canada Assistance Plan (CAP)

The Canada Assistance Plan, enacted in 1966, contributes 50 per cent of costs of provincial, territorial and municipal public assistance and welfare services expenditures. The Plan provides assistance to persons in need and encourages the development and extension of welfare services to prevent and remove poverty, child neglect and dependence on public assistance. In addition to sharing the cost of welfare services, the Canada Assistance Plan provides consultant services available to the provinces and territories for income support, day care, child welfare, institutional care and community development.

The federal contribution through CAP for the fiscal year 1981-82 was \$8.6 million for the N.W.T. and \$2.4 million for the Yukon Territory.

## Vocational Rehabilitation of Disabled Persons Act (VRDP)

VRDP is a shared-cost program. The federal government shares 50 per cent of costs incurred by provinces and territories in providing a comprehensive program for the vocational rehabilitation of physical and mentally disabled persons.

The contribution for the fiscal year 1981-82 was \$180 500 for the N.W.T. and \$42 000 for the Yukon Territory.

## Responsibilities

Veterans Services of the Department of Veterans Affairs provides health and social services, financial assistance and counselling to eligible veterans and their dependants. The Department also provides services to certain civilians whose wartime work was closely related to that of the Armed Forces. The Department has no district offices in Yukon or the Northwest Territories because of the small number of clients. Instead, counsellors visit Yukon from the Prince George District Office; the Northwest Territories are served from the Edmonton District Office.

The Veterans Land Administration provides assistance, guidance and counselling to veterans in the Territories under the Veterans' Land Act. These services are aimed at making it possible for veterans and their heirs, devisees or personal representatives to acquire title to the property on which they are living. This is made possible under an Agreement of Sale with the Director, the Veterans' Land Act.

Because of the very small number of clients, the program has no district offices in the Yukon or Northwest Territories. Services to clients in these areas are provided by Field Officers from the Edmonton District Office.

The Canadian Pension Commission ensures that benefits available under the veterans' pension legislation are extended to all eligible veterans and their dependants. Services include counselling, help in applying for benefits available to them under the pension legislation and obtaining medical examinations for assessing their eligibility for benefits. The Vancouver and Edmonton District Offices provide the Yukon and the Northwest Territories with the same services as those available elsewhere in Canada.

The Bureau of Pensions Advocates provides a counselling service to pension applicants and pensioners on their rights under the Pension Act and related statutes. The Bureau also helps veterans to prepare pension claims and represents them at hearings under the Pension Act. All pension advocates are lawyers.

Veterans of either wartime or peacetime service in the Canadian forces and their dependants, as well as former members of the RCMP and their dependants can use this service.

Veterans in the Yukon and the District of MacKenzie are served by the Bureau of Pensions Advocates District Office in Edmonton. Those in other parts of the Northwest Territories are served through the one in Winnipeg. However, anyone who lives in the Yukon or N.W.T. may get help from any other District Office.

If the Canadian Pension Commission denies an application for a pension, the applicant may request a hearing by an Entitlement Board. The Canadian Pension Commission will pay travel expenses for the applicant and witnesses to the hearing.

## Review 1982-83

At March 31, 1983, 34 veterans or their families in the N.W.T. were receiving pensions for disability or death. In Yukon, 71 individuals had been awarded similar pensions. In the Northwest Territories, there were 15 recipients of either War Veterans Allowances or Civilian War Allowances, and 45 recipients in the Yukon.



# Transportation



# Canadian National

# Canadian Transport Commission

## Responsibilities

CN is responsible for providing transportation and telecommunications services to the North. Historically, this responsibility has entailed operating transportation services to mining and forest industries and exploration and construction projects, as well as providing telecommunications to the residential and commercial sectors.

## Review 1982

The major customer of CN rail has continued to be Pine Point Mines at Pine Point, N.W.T. Pine Point produces lead and zinc concentrates for markets in the South. Terminating traffic was again largely made up of petroleum products for Arctic re-supply. These products are carried from the South to Hay River, N.W.T., where they are transferred to barges for the trip along the Mackenzie River system. Other rail traffic to the North includes materials for the oil drilling industry. This traffic increased to some extent in 1982 as a result of activity in frontier oil projects in the Beaufort Sea and at Norman Wells.

## Plans for 1983

As this report was being written, the North was experiencing the effects of a slack demand in metal markets due to the world-wide recession. The mines at Pine Point were shut down as the year began, and the start-up date of Cadillac Exploration's new concentrator at its lead-zinc-silver property in the Nahanni area had been deferred. Accordingly, the demand for CN Rail services in 1983 will likely decline. However, CN Rail does expect to provide the rail link for the intermodal transport of 30.5 cm pipe to be used for the oil pipeline from Norman Wells to Zama Lake, Alberta.

## Air Transport Committee

### Responsibilities

The ATC licenses commercial air carriers, thus introducing economic regulation. It also monitors commercial air services in Canada and advises the Minister of Transport on civil aviation matters.

### Review 1982-1983

A DEW Line contract was awarded to Pacific Western Airlines Limited (PWA) for the vertical airlift (north-south) for the period October 1, 1982 to September 30, 1983. Another was awarded to Nordair for the lateral airlift (east-west) for the period October 1, 1982 to September 30, 1983. Nordair sub-contracted part of this operation to Bradley Air Services Ltd. Supervision and co-ordination of these contracts continue.

### New Services

Trans North Turbo Air Limited, operating under the firm name of Trans North Air was authorized to operate two Class 8 International scheduled commercial air services to transport persons, goods and mail. The first serves Whitehorse, Y.T. and Juneau, State of Alaska. The second serves Whitehorse, Y.T. and Fairbanks, State of Alaska. Both licences took effect September 16, 1982.

### Corporate aircraft operations

A decision issued on October 25, 1982 set out the Air Transport Committee's findings on corporate aircraft operations that constitute commercial air services, and stipulated the applications that operators should make to ensure that their operations fall within the lawful limits of the Aeronautics Act and the Air Carrier Regulations.

The ATC decision stated that corporate aircraft operators should be required to follow the Aeronautics Act and the Air Carrier Regulations as they currently stand, and that operators should be obligated to apply for an appropriate licence whenever they fly aircraft for "hire or reward".

The Committee believes that such applications should be subject to the Aeronautics Act so that commercial air carriers and members of the public who may be affected may make representations in accordance with the General Rules of the Commission.

Corporate aircraft operators were invited to review their operations in the light of that decision and, as appropriate, to file applications to operate a commercial air service within six months from the date of the decision. A subsequent amendment in early 1983 extended the date for filing applications to December 31, 1983.

The Canadian Business Aircraft Association, Nova (an Alberta corporation), Home Oil and Husky Oil applied to the CTC Review Committee for a review of the decision.

### Helicopter Industry

Public hearings in St. John's, Newfoundland; Vancouver, British Columbia; Edmonton, Alberta; Yellowknife N.W.T. and Hull, Quebec were held in March, 1983 to enquire into all aspects of the carrier industry relating to helicopters but excluding specific individual licence applications. Matters considered included the balance between supply and demand, control of entry, licensing policy, user characteristics, and the financial and operating conditions of the industry.

The Air Transport Committee also reviewed the effect of partial deregulation implemented by the Commission at the request of the Minister of Transport in April 1980. The purpose of the review was to determine whether the changes should be retained, or if regulations should be eased.

The changes made in 1980 were aimed at making commercial helicopter services more flexible and more responsive to market demands. Charter carriers were freed from the requirement of filing long-term rates applying to charters of days or more. Moreover, licensed charter and specialty carriers were exempted from all but the financial requirements of licensing so they could receive authorization to provide services using helicopters in weight groups for which they had not previously been licensed.

# Department of Fisheries and Oceans

## Bankruptcy and Receivership

Lambair Limited

A decision issued September 1, 1982 resulted from hearings held in Thompson, Manitoba on April 19; Rankin Inlet, N.W.T., on May 19; and Churchill, Manitoba, May 31, 1982. The hearings considered applications for services abandoned in 1981, when Lambair Limited declared bankruptcy. The decision granted the major portion of Lambair's unit toll services in Northern Manitoba to Calm Air International Limited and the remainder to Ellair Limited.

Shirley Air Services Ltd.

In 1982, Shirley Air Services Ltd. fell into receivership. By an Order issued by the Transport Committee on October 19 of that year, all of Shirley Air Services' licences were suspended. Accordingly, the carrier is no longer in operation. The Committee is processing four applications proposing to transfer most of the suspended services to three new corporations — Blending Rotors Inc., Can-Arc Helicopters Ltd., and 279742 Alberta Ltd. The terms of operation for the Class 4 and Class 7 rotating wing commercial services to be transferred are at Yellowknife and Inuvik.

## Ocean Science and Surveys (OSS)

OSS operates in the North from its four regional establishments: *Atlantic Region*, at the Bedford Institute of Oceanography (BIO), Dartmouth, N.S.; *Québec Region* (Champlain Centre for Marine Science and Surveys), at the Gare Maritime, Québec City; *Central Region* (Bayfield Laboratory for Marine Science and Surveys), at the Canada Centre for Inland Waters, Burlington, Ontario; and *Pacific Region* at the Institute of Ocean Sciences (IOS), Sidney, B.C.

Ocean Science and Surveys has two operational programs — the Hydrography Program (the Canadian Hydrographic Service) and the Oceanography Program. Both are carried out in the North.

### Hydrography

The Canadian Hydrographic Service (CHS) conducts hydrographic surveys and produces, distributes and maintains up-to-date nautical charts, sailing directions and tide tables for northern waters.

### Review of 1982-83 Surveys

Early in 1982, a joint gravity-bathymetric project, operating from Johnson Point, completed a survey of Prince of Wales Strait.

In the Beaufort Sea, OSS continued to survey a deep-draught (20 m) tanker corridor through an area known to contain pingo-like-features (P.L.F.'s).

With the work done this year, 86 per cent of the 18 km by 315 km corridor has been surveyed.

In the Eastern Arctic, two Canadian Coast Guard vessels, the CCGS John A. MacDonald and the CCGS Labrador, were made available on an opportunity basis. During the season the following projects were completed: a standard survey between Cape Cockburn and Dundas Harbour, a standard survey of the approaches to Resolute, a harbour survey of Croker Bay, a wharf survey on Little Cornwallis Island, a beaching site survey at Grise Fiord in Jones Sound, and a route survey in Resolute Passage. In addition, an extensive shoal area survey south of Bathurst Island was 40 per cent completed.

With the support of the Department of Transport, which provided the Coast Guard ship CCGS Sir William Alexander, OSS completed a detailed survey of the approaches to Akulivik, in Hudson Bay.

## Tides, Currents and Water Levels

Two tidal projects were carried out in Barrow Strait and Prince of Wales/M'Clure Straits. A one-month tidal and current survey was carried out in Amundsen Gulf and southern Prince of Wales Strait, using six tide gauges and one current meter. Three temporary gauges were operated in the Beaufort Sea in support of the corridor survey.

### Chart Production and Sailing Directions

Three new Arctic charts were produced and 30 new editions and 7 reprints were published. Arctic Canada Volume 1, 3rd edition, and Grand Lac des Esclaves et Fleuve MacKenzie, cinquième édition, of sailing directions were published.

### Plans for 1983-84

#### Surveys

The corridor survey in the Beaufort Sea is expected to be completed this year. One over-ice survey will be carried out in conjunction with the Canadian Expedition to Study the Alpha Ridge (CESAR) project north of Ellesmere Island. An additional over-ice survey will be carried out between Bridport Inlet and Byam Martin Island, in Viscount Melville Sound.

In the Eastern Arctic, a major survey of Jones Sound will begin. The survey of the shoal area south of Bathurst Island will continue. Depending upon the availability of Coast Guard vessels, the following major areas will be surveyed: Prince of Wales Strait, to complement spot soundings; Victoria Strait; Wellington Channel to Penny Strait, to complement spot soundings; Pullen Strait; Belcher Channel; Freeman Cove and Steensby Inlet. In Hudson Bay, surveys work will begin on the approaches to the Belcher Islands.

# Department of Indian Affairs and Northern Development

## *Tides, Currents and Water Levels*

To support hydrographic field surveys, tide gauges will be installed or maintained in the Beaufort Sea, Jones Sound, northern Ellesmere Island, and the north half of Foxe Basin. A preliminary tidal and current survey of Dease Strait will be carried out, and the Barrow Strait tidal survey will continue. A tidal survey in Hudson Bay is scheduled. Work to develop a prototype Arctic gauge is continuing and, OSS plans to install the device at the Polaris mine site on Little Cornwallis Island in the summer of 1983.

## *Chart Production and Sailing Directions*

OSS expects to publish one new Arctic chart, as well as 12 new editions and 5 reprints. Sailing Directions, Labrador and Hudson Bay, *Arctique Canadien* Vol. 1, *Arctique Canadien* Vol. III, and *Labrador et Baie d'Hudson* should be available in 1983-84.

## **Northern Affairs Program**

### **Northern Resource and Economic Planning Branch**

#### *Infrastructure Division*

#### **Responsibilities**

The Northern Infrastructure Division is responsible for developing and enforcing transportation policy and for planning and implementing the transportation and communications infrastructure required to serve resource developments and community needs of the two Territories. In planning, directing and co-ordinating the Northern Roads program, the Division is concerned with socio-economic, financial, environmental and technical considerations related to the construction of new roads. Responsibility for maintaining and managing roads has been transferred to the Territorial Governments.

#### **Review 1982-83**

The Division revised the Roads Policy, which is now ready to go to Cabinet.

With the exception of some final clean-up work and gravelling, the sub-grade of the Liard Highway was substantially completed. The road is scheduled to be officially opened during the summer of 1983 to provide a link between Fort Nelson, B.C. on the Alaska Highway and Fort Simpson on the Mackenzie Highway, N.W.T. Hire North, an agency of the Government of the Northwest Territories established to provide training and employment for Native people in road construction trades, has completed its work on this project.

The Dempster Highway runs 674 km north from Flat Creek, near Dawson, Yukon Territory to the Mackenzie Highway in the Northwest Territories, 63 km south of Inuvik, providing road access to that community and to Beaufort Sea activities. Planning and work to complete the road and to reconstruct older sections has proceeded. Traffic on the Dempster Highway was surveyed to obtain an accurate estimate of volume and type. Traffic in support of the oil and gas industry and the re-supply of Inuvik, Fort McPherson and Arctic Red River is expected to increase, and tourist traffic is also growing. Environmental studies and the refinement of a management plan continue.

Planning began for the upgrading of 46 km of the Carcross-Skagway Road from the Alaska Highway to Carcross. This work will bring the standard of the road to that of the connecting Klondike Highway which had been improved by the Government of Yukon in 1981. Increased traffic is expected, particularly because of growing tourism, which is being vigorously promoted by government and the tourist industry. An increase in traffic on this road is expected for 1983 as a result of the closure of the White Pass and Yukon Railway.

Plans are being developed for the completion of the Mackenzie Highway north of Fort Simpson, particularly a 14 km section south of Wrigley. This section will give access to that community and provide further training and employment opportunities to Natives. As well, it will provide another section of the road to Norman Wells in support of the new pipeline. Reviews of environmental evaluations began.

Survey and design work started on rebuilding the North Canol Road. This road runs northeast of Ross River to current and potential mineral resource activities along its length and just across the N.W.T. border at MacMillan Pass. The road was originally built during World War II to move oil from Norman Wells to Alaska. Environmental and socio-economic impact studies are in progress. Efforts are being made to ensure that if construction starts in the summer of 1983, employment opportunities will be provided to local communities.

The Division reviewed the Arctic Air Facilities Policy in conjunction with Transport Canada and the Territorial Governments. Cabinet approval is being sought for a five-year extension of the Policy, and to modify certain of its criteria.

The Cyprus Anvil Mine and White Pass and Yukon Route transportation costs were analysed.

# Northern Transportation Company Limited

A socio-economic assessment of the application from Cattermole timber for an access road was conducted and approval for the project was received from Treasury Board.

Interventions were filed with the Air Transport Committee regarding licence applications by Dome Petroleum and Panarctic Oils.

## **Plans for 1983-84**

Arrangements are being made for the official opening of the Liard Highway, for the summer of 1983. The Division intends to pursue plans for work on the Dempster Highway, Mackenzie Highway, and the Carcross-Skagway and North Canol Roads.

A number of proposals for new access roads to promising mineral resource operations will be processed.

Studies of traffic on particular roads will continue, along with surveys of northern ferry operations and a review of the northern roads paving policy.

Implementation of the Arctic Air Facilities Policy will proceed.

The Cyprus Anvil transportation requirements and those of the White Pass and Yukon Railway will continue to be assessed.

Finally, the Division will carry out cost benefit studies for various roads, i.e., Carcross Road, the Mackenzie Highway extension to Wrigley and Norman Wells and the Inuvik-Tuktoyaktuk road.

## **Administration Program**

### **Technical Services and Contracts Branch**

#### **Responsibilities**

The Branch is responsible for providing professional and technical expertise in planning, designing, procuring, operating and maintaining real property and other departmental assets. The Branch also draws up and administers contracts for obtaining goods and services. Finally, it develops the policies, standards, guidelines, systems and training packages needed to carry out its responsibilities in these areas.

#### **Review of 1982-83**

The Transportation Division provided project management and engineering support services for northern highways. Public Works Canada provided the design and construction services.

On the Liard Highway, subgrade work, including a section built by Hire North, was completed and final surfacing started. Bridge construction scheduled for completion was delayed by excessive spring run-off.

On the Dempster Highway, the Blackstone River temporary bridge was replaced with a permanent structure, and embankment erosion caused by the Ogilvie River in the spring was repaired. The Department obtained authority to proceed with design and environmental studies for the North Canol Road. These activities will continue over the next two years.

The Carcross-Skagway Highway section between Carcross and the Alaska border was completed with the installation of guardrail and delineators.

Final design for the Mackenzie Highway between Fort Simpson and Wrigley was completed, and construction is ready to start.

#### **Plans for 1983-84**

The Department proposes to complete the bridges and gravel surfacing of the Liard Highway and to rebuild km 40-125.5 of the Dempster Highway. Work will continue on other sections of the Dempster Highway and a start may be made on the Mackenzie Highway and the old section of the Carcross-Skagway roads.

#### **Review 1982-1983**

Northern Transportation transported a total of 303,000 tonnes of deck and bulk cargo in 1982, of which 89% was moved in the Mackenzie-Arctic sector.

There was a substantial increase in cargo for Norman Wells in 1982, largely construction materials and equipment for island building and in preparation for the construction of the proposed pipeline to Northern Alberta. This increase in cargo to Norman Wells offset, to some extent, a reduction in petroleum products and drilling muds to the exploration industry in the Beaufort Sea.

Operationally, 1982 was a successful year even though the start of navigation on the Mackenzie River was delayed by close to two weeks due to later than normal ice break-up on Great Slave Lake. The compensating factor, however, was water levels which, in sharp contrast to the past several years, were satisfactory during the 1982 operating season. Therefore, not only were we able to deliver all of the cargo tendered, but we were also able to return all of the marine equipment to Hay River at season's end for inspection and repair.

Immediately following the announced closure of the mine at Uranium City, the Company responded to the drastic reduction in traffic by reducing operating expenses wherever possible in order to minimize the adverse impact. As part of this program, the Company transferred some of its Athabasca fleet to the Mackenzie-Arctic sector. The excess tugs and barges were lifted out of the water at Fort Fitzgerald, and portaged 40 kilometers to Bell Rock, which is adjacent to Fort Smith, where slipways had been constructed for launching.

Tonnages in the Keewatin have been declining steadily since 1979, and again in 1982, the volume of traffic decreased by 19% from the previous season. The reasons for the decline are difficult to pinpoint specifically; however, there are indications that perhaps greater volumes are being airlifted into the Keewatin communities than in the past. In addition, it would appear that there has been some curtailment in construction activity by the Government of the Northwest Territories.

# Northern Pipeline Agency

This past season commemorated the twenty-fifth anniversary of the Company's involvement in the Dewline resupply. This resupply operation began in 1957, under the terms of an agreement between the United States and Canadian governments. There is no doubt that Northern Transportation has played, and is continuing to play, an important role in the maintenance of these Distant Early Warning sites through the provision of sealift support services. The Company is justifiably proud of its contribution.

In late 1981, the federal government issued new and significantly more rigorous regulations relating to the transportation of dangerous goods. These, together with the ever-increasing volume and variety of hazardous materials being moved, particularly for some of our large customers involved in oil and gas exploration in the Western Arctic, prompted the Company to undertake an in-depth study and evaluation of its existing standards and procedures. The major activities were directed towards a revision of the Company's hazardous goods procedures where necessary, in addition to accelerated training and increased supervision of personnel.

During the year, shore operations and marine management and supervisory staff attended professional courses on hazardous materials control and, in addition, in-house training programs were developed for all field operating personnel involved in the handling of hazardous materials. These programs included training in the use of safety/rescue equipment, e.g. breathing apparatus, encapsulated suits and emergency response equipment.

Over the years, Northern Transportation has acquired a high degree of expertise in the handling of dangerous cargoes and the Company is now a recognized leader in the marine field. This has been achieved through the development and implementation of stringent standards and a professional approach to the inherent problems of transporting hazardous materials.

## **Plans for 1983-1984**

The preliminary forecasts for 1983 reflect a small tonnage increase in the Mackenzie-Arctic sector, principally due to island building and pipeline construction activity in the Norman Wells area.

The Keewatin sector is expected to produce approximately the same volume of cargo as in 1982. In the Athabasca, a further substantial reduction, in excess of 50%, is forecast.

Recently, there have been discernible changes in transportation patterns in the Western Arctic. As an example, substantial quantities of bulk fuel products are now being transported from the West Coast to the oil and gas exploration staging sites in the Beaufort Sea. This and other developments are having an effect on our operations, and success in the longer term will no doubt be determined by the Company's ability to adapt to a dynamic, changing environment.

## **Responsibilities**

The Northern Pipeline Agency was established in April 1978 with the proclamation of the Northern Pipeline Act. The Agency oversees the two basic objectives of the legislation which are: to facilitate planning and construction of the 3 240-km Canadian section of the Alaska Highway Gas Pipeline, and to regulate the project so that the economic, industrial and energy benefits for Canada are maximized; the adverse social and environmental impacts are minimized; and that the system operates safely and reliably.

The pipeline will carry natural gas from Alaska along a route closely following the Alaska Highway through Yukon and northeastern British Columbia before entering central Alberta. At Caroline, Alberta, the line to the United States branches into two legs. One runs through southeastern British Columbia, and the other through southwestern Saskatchewan. A future pipeline branch along the Dempster Highway, joining the main pipeline at Whitehorse, Yukon, would give Canada access to established reserves in the Mackenzie Delta and any new ones that might be found in the Beaufort Sea.

## **Review 1982-83**

In April 1982, the Canadian and U.S. pipeline sponsors stated that current economic conditions precluded completion of the pipeline by the target date of 1987. The sponsors said they would finish the project by late 1989 instead, or possibly one year earlier.

The scaled-down operations of the Canadian company, Foothills Pipe Lines (Yukon) Ltd. has meant that Northern Pipeline Agency has reduced its staff and activities accordingly. The Agency's staff has been reduced by 50 per cent in its Yukon office until construction resumes on the main pipeline.

Throughout the 1982-83 year, Foothills Pipe Lines (Yukon) Ltd. continued to monitor the results of a test facility constructed in 1981 at Quill Creek, Yukon. Its purpose is to determine the feasibility of constructing and operating a pipeline in areas of intermittent permafrost. Data from this and other technical programs, together with the discovery that permafrost extends further into Yukon than was previously believed, prompted Foothills to move the last point from which chilled gas was intended to flow to another, located 149 km south.

Foothills also concluded from the test program that the most effective way to resolve both the frost-heave problem associated with chilled gas, and the thaw-settlement difficulties associated with warm gas in certain areas of discontinuous permafrost terrain having a high moisture content would be to install the pipe above ground. The Company now plans to install pipe in the embankment mode over a distance of 40 to 100 kilometres.

After considering 11 other possible routes, the Minister of the Northern Pipeline Agency, Senator H.A. (Bud) Olson, announced in March 1983, that he had approved the final route of the pipeline through Yukon.

In its interim report to the Minister of Environment in September 1979, the Environmental Assessment and Review Panel (EARP) raised questions about four sections of the route in Yukon proposed by Foothills. Specifically, the Panel had concerns about those sections that departed significantly from the Alaska Highway corridor. In a report dated July 1981, the Panel recommended to the Minister of the Environment that the pipeline follow the Whitehorse West alternative route, rather than the Company's preferred route through the Ibex Pass. Although it accepted the Company's position that the pipeline could be built without adversely affecting the environment, the Panel was concerned about the effects that easier first-construction access might have on this remote area. The report was forwarded to the Minister responsible for the Northern Pipeline Agency for consideration when deciding on the final route.

In response to the concerns expressed by the Panel, the Yukon Territorial Government, with financial assistance from the Agency, decided to commission a consultant study. The study investigated the resources of the Ibex Pass and the best way of protecting and conserving them. In February 1983, after considering the study, the Yukon Government announced that it intended to designate the Ibex Pass as a Special Management Area. The YTG also endorsed the routing of the pipeline through the Pass, subject to various safeguards, which was in line with an earlier recommendation by the Yukon Advisory Council. In his announcement of March 1, 1983, Senator Olson agreed to this routing.

In June 1982, the Panel conducted hearings in Whitehorse to consider the remaining submissions from the Company on unresolved environmental issues. The Panel's October 1982 final report and recommendations concluded that Foothills and those branches of the Federal government (including the NPA) involved in the pipeline clearly understood the potential problems related to this project.

Approval of the final route will permit the federal government to enter into an easement agreement with Foothills covering the right-of-way of the pipeline through Yukon. The establishment of the final route also allows the Department of Indian Affairs and Northern Development to lift the freeze that has existed for several years on new land dispositions within an 8 km corridor along the proposed pipeline route.

During the year, Northern Pipeline Agency officials continued to consult with representatives of the Territorial Government on pipeline matters. Yukon Government and Agency officials also participated in quarterly sessions of the Federal-Provincial-Territorial Consultative Council.

A four-month long traffic study was completed in the summer of 1982 to obtain information on the numbers, types and direction of vehicles travelling along the Alaska Highway between the Yukon-British Columbia and the Yukon-Alaska borders. The information gathered will help in determining road maintenance costs, scheduling trucking operations, and planning for long-term capital improvements. The study will also be used to determine how traffic congestion can be minimized.

### **Plans for 1983-84**

Although the completion of the pipeline has been delayed, project planning is expected to continue, over the next two years, but at a much reduced level.

Early in the 1983-84 fiscal year, the federal government is expected to enter into the easement agreement over Crown lands with the pipeline company. At first, the proposed right-of-way will be 240 m wide. Later, it will be reduced in most areas to 40 m, after construction has been completed.

The major issue that remains to be resolved in Yukon is the promulgation of the proposed socio-economic and environmental terms and conditions. Their consideration was deferred pending a review of the possible implications of the mobility rights contained in the Canadian Charter of Rights and Freedoms. The proposed Yukon terms and conditions give hiring preference to Yukon and Mackenzie District residents. They also stipulate that other residents may be hired in southern centres for work in the North, an approach that was proposed as a means of controlling in-migration.

# Public Works Canada

## Responsibilities

Public Works Canada (PWC) is the largest construction and real property management organization in Canada. PWC provides a wide variety of architectural, engineering and construction services to other Government departments and agencies. It assists in planning and design work, investigating possible building sites and carrying out feasibility studies. The Department is also responsible for constructing and managing buildings, public utilities, highways, harbours and wharves. It also acquires and disposes of land and properties. In addition, PWC leases premises for the Government of Canada and supervises the renovation, maintenance and management of government buildings.

In the North, the Department is involved in housing and transportation. It provides accommodation for federal government employees and designs, constructs and maintains the ever-expanding highways system in the Yukon and the Northwest Territories. Through its dredging activities, PWC also keeps water transportation routes navigable in the North.

## Western Region

### Review 1982-83

#### Highway Construction

With the exception of about 50 km of road that still requires trimming work, all grade construction on the Liard Highway has been completed. Sub-structures were completed on four steel and concrete bridges, and gravel crushing for the final surfacing was underway. Traffic started using the highway in late July 1982, although it had not been officially opened. Total construction costs for the fiscal year were \$6.5 million.

The Department completed the survey work and developed plans for constructing 14 km of the Mackenzie Highway near Wrigley. Construction work was last carried out in 1977 and stopped short of Wrigley.

During April 1982, a small test embankment was constructed near Inuvik, on the proposed Inuvik-Tuktoyaktuk Highway. The purpose was to test whether fine-grained material with a high ice content was suitable for road construction.

## Marine Projects

Maintenance dredging on the Mackenzie River Waterway was carried out at a cost of about \$1.1 million.

A feasibility study was completed for the proposed Ramparts Rapids dredging. The study included sounding surveys, test borings and consultant studies. A survey of the Peel River Ferry Crossing was also done as part of a study to explore ways of reducing silting problems at the ferry landings.

Routine maintenance continued on the public wharves throughout the Mackenzie system.

### Plans for 1983-1984

#### Highway Construction

The Liard Highway is scheduled to be opened, and the road will be officially opened to traffic.

No other work has currently been planned for the Northern Highways Program for 1983-84.

## Marine Projects

The Department will continue its maintenance dredging on the Mackenzie River Waterway. Maintenance of all public wharves will continue under the direction of Transport Canada.

## Pacific Region

### Review of 1982-83 Plan

Maintenance of both the Alaska Highway west of km 1008 (B.C.-Yukon Border crossing near Watson Lake, Yukon), and the Haines Road at a cost of \$12.1 million was carried out by the Yukon Government under the Highway Maintenance Agreement between it and PWC. Work consisted of routine maintenance and extension of the asphalt-aggregate surface treatment on the Alaska Highway.

PWC's Capital Program for the Northwest Highway System in Yukon totalled \$10.2 million and included the following major contracts:

- Grade construction km 1346-1365
- Grade construction km 1293-1308
- Grade construction km 1046-1056
- Grade construction km 1265-1273

Work on the Shikwak Project was limited to finishing the sub-grade from km 70.2 to km 79.9, Haines Road, and completing the base course and paving of this section and the section from km 79.9 to km 88.5 at an expenditure of \$5.0 million.

Pre-engineering surveys and design were carried out from km 229.6 to km 28 on the Canol Road in Yukon for the Department of Indian Affairs and Northern Development. Surveys and soil investigations were also carried out for the Pelly River Bridge at Ross River. The approaches and abutments were completed, and work started on the piers and superstructure for the Hyland River Bridge on the Nahanni Range Road.

Work started on a \$1 million contract for rip-rapping four locations along the Ogilvie River section of the Dempster Highway for the Department of Indian Affairs and Northern Development.

### Plan for 1983-84

The Highway Maintenance Agreement with the Government of Yukon will be renewed for another five years, and the Yukon Government will continue to carry out the routine maintenance. A further 116 km of the Alaska Highway will be surface treated with emulsified asphalt and crushed gravel.

The Public Works Capital Program on the Alaska Highway in Yukon will total \$13.6 million and will include the following major projects:

- Complete grade construction km 1293-1308
- Grade construction km 1275-1292
- Grade construction km 1308-1323
- Replace Long's Creek Bridge km 1859
- Replace Dry Creek Bridge km 1905

On the Shikwak Project work will be limited to installing guide rails and carrying out minor clean-up projects.

Projects sponsored by the Department of Indian and Northern Affairs will include:

- Nahanni Range Road
- Completion of Hyland River Bridge
- Start on permanent bridge at the Upper Francis River Crossing

- Canol Road
- Continuation of pre-engineering and design
- Start on reconstruction
- Start on bridge crossing the Pelly River at Ross River, Yukon

- Dempster Highway
- Completion of rip-rapping four section along Ogilvie River.

# Transport Canada

## Canadian Air Transportation Administration

The Canadian Air Transportation Administration (CATA) is responsible for developing a safe, efficient national civil air transportation system that contributes to meeting government objectives. The Administration is also responsible for operating specific parts of this system. For example, CATA's northern activities include providing airports, air traffic control facilities and services and navigational aids for domestic and international air routes. The Air Administration also carries out strategic and master planning for northern air transportation and budgets for and implements approved projects.

Policy-making and national systems management are centralized at Ottawa headquarters. However, operational responsibilities are decentralized. Thus, the Ottawa headquarters gives national direction to the civil air transportation system and develops policies, standards and regulations, while six regional offices operate the system on a day-to-day basis. Three of these offices — Québec, Central and Western — are concerned with CATA's northern activities.

### Arctic Air Facilities Policy

The Policy for the Provision of Air Transportation Facilities and Services in the Yukon and Northwest Territories, generally referred to as the Arctic Air Facilities Policy, was approved in 1974. The policy, which formally expired on March 31, 1983, provided funding for construction and operation of airports and air navigational aids in the Yukon and Northwest Territories, and also for training of locally hired airport maintenance staff and weather observer/communicators. Under the policy, airports are classified Arctic A, B, or C, as defined by a number of characteristics, with minimum standards established for the authorized facilities. Arctic A airports are major airports which serve larger communities and have scheduled jet aircraft operations. These airports are owned and operated by Transport Canada either directly or under contract. Arctic B and C airports primarily serve the needs of smaller communities and are not generally operated by Transport Canada.

Of the 62 airports generally covered by the Arctic Air Facilities Program, 11 were classified as Arctic A and the rest as Arctic B or C. In recent years, expenditures at Arctic A airports have, for the most part, been to restore or replace facilities and equipment. Total capital expenditures to the end of 1982-83 were approximately \$30 million, compared with the financial ceiling of \$56 million approved in 1977. The current approved capital expenditure level for completing the B and C airports program is \$81 million. As of March 31, 1983, about \$60 million has been spent at some 40 sites. The remaining funds will be spent on completing work under way and refurbishing existing airports.

A review of the Arctic Air Facilities Policy was carried out by CATA and the Arctic Transportation Directorate. In 1982, a report was released after being reviewed by the Territorial Governments, federal departments and the aviation industry. The report suggests that the CATA national airports classification system be extended to the Arctic to replace the current unique classification system, that new airport facilities be provided only to communities more than three hours surface travel time from an airport with regular commercial air services, and that there be more flexibility in determining runway lengths and other airport facilities. Three options were presented for the future:

- Let the Arctic Air Facilities Policy expire.
- Renew the policy with changes for a further five-year period; or
- Develop a new policy with administration and control by Territorial Governments.

The federal government will have to review the air facilities policy if new community airports are to be developed in the Territories.

## Civil Aeronautics

The Civil Aeronautics Directorate is responsible for regulating aviation in Canada and for providing air navigation services. The Air Navigation Services Activity includes designating air routes; inspecting and calibrating navigational aids; inspecting runways and manoeuvring areas; designing, constructing, installing, operating and maintaining telecommunications and electronic facilities; providing an air traffic control system for Canada and in that international airspace for which Canada has accepted responsibility through the International Civil Aviation Organization (ICAO); and funding meteorological services in support of aeronautics.

The regulatory activity includes developing and enforcing aeronautics legislation, standards and procedures; inspecting, examining, licensing and certifying aviation personnel, commercial operators and aircraft; inspecting aircraft manufacturing and repair; and investigating aircraft accidents and incidents.

### Aeronautical Licensing and Inspection Branch

As of December 31, 1982, 390 valid licences and permits were held by people living in the Yukon Territory and 544 by people living in the Northwest Territories.

The Departmental Gulfstream II (C-GCFF) aircraft continued to carry out flight inspections of both electronic and visual aids en route, and landing/approach aids throughout the Arctic. These inspections ensure that these aids (which greatly improve the accessibility of many northern settlements by air), are operating properly.

### Air Traffic Services Branch

Air Traffic Services continued to provide both control services for flights operating under Instrument Flight Rules (IFR), and an alerting service for aircraft known to be in difficulty and those overdue on flight plans or notifications.

For air traffic control purposes, the high-level airspace in Canada has been divided into three general areas: the Arctic Control Area, the Northern Control Area and the Southern Control Area. Control services were provided to all flights operating within these areas, using the Arctic domestic high-level airway network. In addition, flights with sophisticated, self-contained, airborne navigation systems were accommodated on Great Circle and minimum time, direct tracks.

In the low-level airspace, control service was provided to IFR flights operating along designated airways and within control area extensions. North of 60°, these control area extensions are provided at Fort Smith (50 nautical mile (NM) radius), Hay River (50), Norman Wells (50), Yellowknife (50), Frobisher (40), Inuvik (40), Whitehorse (40), Fort Simpson (26), Teslin (25) and Watson Lake (25). Control Zones for additional protection and improved service are provided at the following airports: Fort Simpson (5 NM radius), Frobisher Bay (5), Norman Wells (5), Watson Lake (5), Inuvik (5), Hay River (10), and Fort Smith (10). Positive Control Zones with established Transport Canada control towers are located at Whitehorse (5 NM radius) and Yellowknife (5).

Aerodrome Traffic Zones provide protection for aircraft operating at uncontrolled airports. These zones of 5 NM radius are located at Baker Lake, Cambridge Bay, Coral Harbour, Deception Bay, Eskimo Point, Eureka, Fort Resolution, Hall Beach, Grise Fiord, Nanisivik, Rankin Inlet, Resolute and Wrigley.

To provide for these activities, Air Traffic Services operates an extensive dedicated voice telephone network to locations in the North, along with lateral voice communication between Edmonton, Montréal, Moncton, Frobisher, Chimo, Resolute Bay, Gander and Reykjavik.

In addition, to assist in IFR traffic control, the Edmonton Area Control Centre has direct controller-to-pilot communications through peripheral (PAL) remote transmitting and receiving at Hay River, Inuvik, Norman Wells, Whitehorse and Yellowknife. The Winnipeg Area Control Centre also has a PAL located at Churchill.

#### *Telecommunications and Electronics Branch*

The Telecommunications and Electronics Branch operates a network of Flight Service Stations (FSS) and Remote Communications Outlets (RCO) in the Yukon and Northwest Territories. These stations are staffed by approximately 130 flight service specialists, who provide aeronautical communications and related flight services to the northern aviation community. Flight Service Stations are being constantly upgraded in the North with the established of aviation weather information services (AWIS) and VHF direction finding equipment.

New community aerodrome radio stations (CARS) were established at Teslin, Ross River and Nanisivik in 1982.

The network of CARS continues to develop throughout the North. Studies are also being conducted on automated weather observing and reporting stations (AWORS). When they are established, they will provide hourly weather observations from remote, uninhabited locations. Approximately 50 VHF AM transceivers were installed in 1982-83 in order to provide or improve ground-to-air communications in the North.

Under the CARS certification program, which began in January 1982, Transport Canada certified 50 observer/communicators. In a joint Transport/DIAND sponsored training program at Rankin Inlet, three Native Northerners began to train as flight service specialists. This program is expected to continue in 1983.

#### *Non-Directional Beacons (NDB)*

In 1982-83, Transport Canada installed 16 solid-state NDBs in the North. These have been either new facilities, or replacements for old, unreliable, tube-type systems. The installations will improve navigation in the North by increasing coverage and reducing off-air time.

#### *Aviation Safety Bureau*

The Aviation Safety Bureau has continued to brief federal government employees on passenger safety. These briefings are provided to staff who work either permanently or periodically in the North. Increased attention has been placed on charter aircraft contracts, passenger safety around fixed-wing aircraft and helicopters, passenger/pilot relationships and survival training.

Transport Canada Regional Aviation Safety Officers (RASO) regularly distribute aviation safety literature and posters to northern flight service stations and AES weather offices. These Officers hold safety seminars for association groups, the staffs of air carriers, and their customers. In the seminars, the focus is on consumer education and promoting awareness of the considerations and decisions upon which flight safety depends. As a result of these seminars, pilots have reported a significant decrease in pressure from clients to fly in unsafe conditions.

In dealing with air carriers, the Bureau is placing more emphasis on the non-regulatory aspect of aviation safety. Company pilots are being trained as aviation safety officers to develop in-house programs within their companies. Enthusiastic response to the training has led to a full-fledged national program for 1983-84.

For the first time, the safety interests of governments, aviation companies and their customers are being clearly defined and co-ordinated.

The Bureau is encouraging carriers to report incidents that have not resulted in any accident, but which have safety implications. In this way, the Bureau hopes to detect safety-related problems before accidents occur. The Bureau has also allocated more resources to investigating incidents and hazards and to providing advisory services on safety matters. This approach complements voluntary reporting of potential and actual safety problems by charter operators and their customers in the North.

## *Airports and Construction Services Directorate*

This Directorate is responsible for operating the national airports system. It is also responsible for the planning, design, construction and maintenance of all airport facilities, with the exception of air traffic control and related equipment.

The Directorate has responsibility for establishing national objectives, plans, priorities, policies and standards for providing airport facilities and services. It is also responsible for maintaining security at airports. Finally, the Directorate provides both advisory assistance to community airports and engineering and architectural services to CATA installations both on and off airports) and to other sections of Transport Canada, other federal agencies and Territorial Government organizations.

### *Québec Region*

One Arctic A airport (Frobisher Bay) and seven Arctic C airports (Pangnirtung, Broughton Island, Clyde River, Pond Inlet, Cape Dorset, Lake Harbour and Sanikiluaq) are located in the Québec Region.

A status report on construction at these sites follows:

### *Review 1982-83*

**Broughton Island:** An airport emergency vehicle was delivered during the year. Minor repairs also have been completed to improve the airfield's drainage system.

Problems with the angle of descent have been corrected for the VASIS (Visual Approach Slope Indicator System), and the equipment is about to be flight-checked.

**Cape Dorset:**

An airport emergency vehicle was delivered last year. The construction work needed to relocate the NDB has been partially completed. All work will be finished in 1983-84, when the electronic equipment arrives on site. The VASIS installation is complete and is ready to be flight-checked.

**Clyde River:**

Apron floodlights have been installed and repairs to the garage were carried out in 1982-83. The VASIS installation is complete and is ready for flight-checking.

**Frobisher Bay:**

The UHF and VHF transmitters were replaced and are now both housed at the rehabilitated VHF transmitter site. Some airport buildings were insulated.

**Pangnirtung:**

An emergency airport vehicle arrived in 1982-83. The VASIS installation is complete and ready for flight-checking. Installation of the Non-directional Beacons (NDB) was scheduled for this year, but has been postponed until 1984-85.

**Pond Inlet:**

An emergency airport vehicle was delivered and apron floodlights were installed. The VASIS installation is complete and ready to be flight-checked.

Civil works for the NDB relocation are partially complete and will be finalized in 1983-84, when electronic equipment is available.

**Sanikiluaq:**

The VASIS installation is complete and ready for the flight check. A legal land survey for the airport has been carried out.

### *Plans for 1983-84*

**Broughton Island:** No major projects are planned for the coming year, although the VASIS will be flight-checked.

**Cape Dorset:**

Work to relocate the NDB is expected to be finished this year, and the VASIS will be flight-checked.

**Clyde River:**

The provision of an airport emergency vehicle, originally programmed for 1983-84, has been postponed until 1984-85.

The VASIS is scheduled for flight checking this year.

**Frobisher Bay:**

The emergency power unit (EPU) at a transmitter site will be replaced in 1983-84. Also, modifications to the Air Terminal Building (ATB) heating system and to the staff-house are planned.

**Lake Harbour:**

The VASIS will be flight-checked in 1983-84. Purchase of an emergency vehicle, planned for 1983-84, has been postponed to 1984-85.

**Pangnirtung:**

The VASIS will be flight-checked in 1983-84. The relocation of the NDB has been delayed until 1985-86 due to problems in land availability.

**Pond Inlet:** In 1983-84, the NDB installation is scheduled to be completed and the VASIS will be flight-checked.

**Sanikiluaq:** The VASIS will be flight-checked in 1983-84.

### Central Region

One Arctic A Airport (Resolute Bay) and 14 Arctic B and C sites are located within Central Region.

The following airports have Community Airport Radio Stations (CARS); staffed by observer/communicators: Chesterfield Inlet, Eskimo Point, Gjoa Haven, Grise Fiord, Igloolik, Nanisivik, Pelly Bay, Repulse Bay, Spence Bay and Whale Cove.

The following provides a review of construction activity at these sites during 1982-83.

#### Review of 1982-83

**Baker Lake:** A new ATB and Flight Service Station (FSS) complex was started in the summer of 1982, and is scheduled to be operational by the end of April 1983. The new overhead power line for supplying electricity to the airport was completed in the fall of 1982. Two maintenance garages underwent an energy conservation retrofit; new doors were installed, and existing doors were fitted with additional seals. The meteorological area adjacent to the new ATB/FSS was completed this year.

**Chesterfield Inlet and Resolute Bay:** An aggregate source study was completed during the year by Trident International Inc.

**Coral Harbour:** An energy conservation program included installing new storm windows for the offices and dining hall, new pedestrian doors and overhead door seals. A new liner was installed in the south cell of the domestic water reservoir.

**Eskimo Point:** A docking jetty was built and accommodation trailers and equipment were repaired. A new furnace was installed in the equipment garage, and electrical work was completed.

**Gjoa Haven:** The airport development project that began in 1981-82 was completed. Facilities now include a 1340 m x 30 m runway, taxiway and apron, meteorological, fuel and building areas, and an access road. A power line was installed from the community to the airport.

**Grise Fiord:** Deficiency work on the NDB facility relocation was completed during the year.

**Hall Beach:** A new ATB and two attached staff apartments were built during 1982. Runway 12-30 was relocated and upgraded and the existing apron was expanded. The community access road was re-routed and a new VASIS, rotating beacon, runway and apron lighting, windsocks and an underground power line to the maintenance garage were installed.

**Igloolik:** A temporary lighting kit was installed.

**Rankin Inlet:** Uncrushed, granular material was placed on the runway, apron and taxiway graded areas, with fine grading to be completed in 1983-84.

**Repulse Bay:** Reconstruction of the runway was completed, and associated taxiway, apron, building development areas, VASIS pads, fuel facility and meteorological pads with connecting roads were constructed.

A passenger shelter building was also built and is in use. Finally, construction started on a new area for weather instruments.

**Spence Bay:** Construction of the passenger shelter building, and the runway extension was completed.

**Whale Cove:** The Field Electrical Centre was constructed and a VASIS installed.

#### Plans for 1983-84

**Baker Lake:** The floor of the maintenance garage will be repaired or replaced, and a maintenance garage snow deflector may be constructed and installed.

**Eskimo Point:** Crushed gravel will be placed on runway, apron and taxiway, and will be stockpiled to meet ten-year maintenance requirements.

Joja Haven:	Installation of airport lighting, including a VASIS, is planned for 1983-84, and a passenger shelter building is expected to be completed.		
all Beach:	This year, the extensive work that began in 1982-83 to improve the airport will be completed.		
ankin Inlet:	The maintenance garage floor will be repaired or replaced and fine grading of graded areas will be done.		
epulse Bay:	Airport lighting, including a VASIS, is to be installed.		
bsolute Bay:	Construction of VASIS pads and installation of the equipment are planned.		
hale Cove:	A docking jetty will be constructed to unload a gravel crusher. A road to haul it will be built and feed material stockpiled. If time permits, some crushing will be done.		
		<b>Western Region</b>	
		Nine Arctic A airports (Cambridge Bay, Fort Simpson, Fort Smith, Hay River, Inuvik, Norman Wells, Yellowknife, Watson Lake and Whitehorse) and 30 Arctic B and C airports are located in the Western Region.	
		The Region has continued its program of converting appropriate Flight Service Stations to Community Airport Radio stations, which are staffed by observercommunicators. Eleven airports are now staffed and operational: Faro, Ross River, Teslin and Old Crow in Yukon Territory; and Aklavik, Fort Resolution, Fort McPherson, Fort Good Hope, Holman, Wrigley and Sachs Harbour in the Northwest Territories. Teslin was converted to the CARS operation in November 1982.	
		In addition to carrying out various airport construction projects, the Region is planning to develop the air infrastructure necessary to serve the resource development areas in the Western Arctic and Yukon. Feasibility studies of project definition activities relating to Beaufort Sea developments at Tuktoyaktuk are being carried out. Others have been completed in response to projected mining activities at Faro. The Region is also assessing the impact of northern pipelines on airports in the MacKenzie Valley. Depending upon the resource development in this area, the airport facilities will be expanded, possibly using outside resources.	
		The following provides a status report on construction at Western Region Arctic airport sites in 1982-83.	
		<b>Review of 1982-83</b>	
		Hay River:	
		The energy retrofit of the Air Terminal Building (ATB) and maintenance garage was undertaken, and facilities for the handicapped were completed. Navigational radio equipment was upgraded and flight-checked in 1982-83. Also, the equipment storage compound base was completed during the summer season.	
		Yellowknife:	
		Work on the overlay paving of runway 15-33, taxiway "A" and aprons 1 and 2 started, and additional pavement in the ATB and firehall area was added. Part of the ATB access road was paved. The maintenance garage was upgraded, and the ATB and maintenance garage energy retrofit was completed. Additional boundary fence was supplied and erected in September 1982. Illuminated runway and taxiway signs were installed during the summer, and facilities for the handicapped were completed. Finally, a new pick-up truck and wobbly-wheel packer were delivered to the airport.	
		Fort Simpson:	
		A three-bay vehicle cold storage garage was completed in the fall of 1982. The vehicle parking lot was also completed, and facilities for handicapped people were installed.	
			A new grader was received and a runway sweeper was replaced.
		Inuvik:	
		Work was completed on the water supply to the ATB and the airport entrance road was chipsealed. The roofs of the ATB, maintenance garage, powerhouse and radio-sonde building were repaired, and alterations to Emergency Services, Administration and lecture facilities are 60 per cent complete.	

Cambridge Bay:	Gravel surface improvements to lift runway 13-31 were completed in 1982-83. A new fire alarm system was installed, and a replacement plow truck with a roll-over plow was delivered.	Fort Smith:	Asbestos insulation in the maintenance garage was removed and other insulation material was installed. The runway 11-29 overlay, including the apron and taxiway, was completed and the handicapped facilities were 75 per cent completed. Other projects included new cables for the airfield lighting system and installation of DVOR/DME scan. A 16-horsepower garden tractor and a pick-up truck were received, and a snow-blower was replaced.	Fort Smith:	Modifications to the sewage lagoon are planned. The final 20 per cent of the facilities for handicapped people will be completed, and airport buildings will be refitted to conserve energy.
Whitehorse:	The preliminary design for a new ATB was completed and presented to the Airport Consultative Committee. Facilities for the handicapped were completed, and a first aid station was put into operation. Work was done on roads, the parking lot and aircraft apron as well as firehall development. Finally, maintenance garage energy retrofit was finished.			Hay River:	The runway approaches and handicapped facilities will be completed this year.
		Norman Wells:	The asbestos insulation in the maintenance garage was removed and replaced with other material. Repairs to the aircraft parking apron were completed, and the project to provide facilities for the handicapped was 40 per cent complete. The development of an area to be used as a compound for storing equipment and materials was 80 per cent complete, as was the development of the fire training area. Finally, interim ATB renovations were started and a wobbly-wheel packer procured.	Inuvik:	Construction of a new firehall is slated for 1983-84. The handicapped facilities will be completed, construction of a building for storing sand is planned, and an energy conservation retrofit of various buildings will be undertaken. Efforts to resolve operational difficulties with the Instrument Landing System (ILS) glide-slope are continuing.
Watson Lake:	Site housing was upgraded in 1982-83, and facilities for the handicapped were 95 per cent complete. Part of the runway electrical system was upgraded, and official zoning regulations were established. A fire truck was replaced, and a new dump truck and a 16-horsepower garden tractor were delivered.			Norman Wells:	A master plan for the airport will be completed early in 1984. Interim renovations to the terminal will be carried out, and work on providing handicapped facilities will continue.
				Watson Lake:	A security fence will be erected, and certain buildings will undergo an energy conservation retrofit. Facilities for the handicapped will be completed and zoning regulations will be established.
<b>Plans for 1983-84</b>					
Cambridge Bay:	More improvements to the gravel surfaced runway 13-31 will be made this year. Handicapped facilities will be completed, and official zoning regulations will be established.				

Whitehorse:	Work is expected to start on the new ATB and related projects, i.e., the air terminal, roads, car park and aircraft apron. For the summer of 1983, work should begin on sub-projects, such as roads and the carpark. The power line to the VOR/DME will be rebuilt.	Tuktoyaktuk:	Crushed rock will be supplied and stockpiled for maintaining the runway surface and gravel will be placed on runway and taxiway surfaces.
		Wrigley:	The gravel overlay of the runway, taxiway and apron will be completed, and the visual aids system replaced.
Yellowknife:	Work will continue on the overlay of runway 15-33, aprons 1 and 2, and taxiway "A". Handicapped facilities will be completed, and approvals for extensive ATB modifications will be sought.	Beaver Creek:	Airport development, including a communication and meteorological facility, will be completed.
		Dawson:	The apron, taxiway and associated drainage will be upgraded, and additional aircraft parking area will be provided.
Uklavik:	The airport will receive a snowblower in 1983-84.	Old Crow:	Construction to provide separate airside and groundside access or egress to and from the passenger/cargo shelter will be undertaken. A safety fence at the passenger/cargo shelter and the aviation fuel area will be installed, and an airport boundary legal survey will be conducted.
Fort Franklin:	A site selection report and a preliminary design are to be completed.		
Fort Liard:	Civil works for the airport's development will be completed. A snowblower, pickup truck and grader will be provided, and visual aids and a hazard beacon facility will be installed.		
Fort Norman:	Airport development, including a communication and meteorological facility, will be completed, and a snowblower will be provided.	Ross River:	Airport development is planned for this year.
		Teslin:	The taxiway and its drainage will be upgraded.
Holman:	A snowblower will be provided for this airport in 1983-84.		
Lac La Martre:	Airport development to Arctic "C" standard will start in 1983-84.		

## Canadian Marine Transportation Administration

### *Responsibilities*

The Canadian Marine Transportation Administration (CMTA) works to make the national marine transportation system both efficient and safe. The Administration is composed of the Canadian Coast Guard, the National Harbours Board, the Ports and Harbours Directorate, the St. Lawrence Seaway Authority and the Atlantic, Laurentian, Great Lakes and Pacific Pilotage Authorities. In the Arctic, the Administration provides facilities and services for commercial and re-supply shipping.

### *Canadian Coast Guard*

The Canadian Coast Guard (CCG) co-ordinates the delivery of cargo to northern communities for the Canadian government, the United States Air Force (USAF) and Canadian commercial interests. It also provides ice and route information and icebreaker services. The Directorate carries out environmental research and surveys; it installs, operates and maintains marine navigation aids and a network of Coast Guard radio stations and carries out search and rescue operations. Finally, the Directorate administers the Navigable Waters Protection Act (NWPA) and Arctic Waters Pollution Prevention Act (AWPPA).

### *Review of Arctic Operations 1982-83*

The Canadian Coast Guard (CCG) co-ordinated and carried out the annual re-supply in the Eastern Arctic. It assisted in delivering fuel, equipment and other commodities by ship to isolated bases, communities, and Distant Early Warning (Dewline) sites. It also provided ice-routing and icebreaker escort to commercial shipping, particularly on the Hudson Bay route to Churchill, and to ships calling at Frobisher Bay, Strathcona Sound, Resolute, Little Cornwallis Island, and at sites on the east Baffin Coast and in Foxe Basin.

Eastern Arctic Sealift used the services of nine dry cargo vessels and four tankers. Cargo was delivered to 31 sites, including civil settlements and Dewline sites in Canada and Greenland. A total of 10 393 tonnes of dry cargo was delivered, along with 28 881 tonnes of petroleum, oil and lubricants in bulk. Ten tonnes of cargo were moved between sites, and an additional 186 tonnes were shipped south to Québec, Montréal and Ogdensburg, N.Y. Dry cargo and bulk oil tonnages delivered to Eastern Arctic sites and settlements decreased by 1 220 tonnes and 4 428 tonnes respectively, and vessels delivering dry cargo and petroleum products called at 13 fewer sites.

Personnel of the Arctic Sealift section also assumed Custom Officer and Port Warden responsibilities at Nanisivik. Total shipments of lead and zinc ore from Nanisivik decreased this year by 26 051 tonnes, but the shipments of ore from Little Cornwallis Island were the first from that site since 1973 when the M/V Helga Dan loaded 3 350 tonnes of lead and zinc ore for delivery to Ogdensburg, N.Y.

The Coast Guard Traffic Centre identified as "Nordreg Canada" and the Ice Operations Office, Frobisher Bay, monitored and controlled marine traffic movements in Arctic waters. They provided information on marine traffic, navigational dangers, weather, ice conditions, ice routing services and allocated icebreaker support to shipping as required. During the navigation season, 72 vessels, including Canadian Coast Guard ships, entered the Arctic Canada Traffic Zone. In all, these vessels made 105 trips to Arctic ports in 1982-83. By comparison, in 1981-82, 75 vessels made 99 trips to ports within the zone.

Coast Guard marine surveyors, who are also Pollution Prevention Officers appointed under the Arctic Waters Pollution Prevention Act, monitored compliance with pollution prevention regulations and carried out safety inspections on drillships in the Beaufort Sea.

During the 1982 Arctic navigation season, Coast Guard Radio Stations continued their vital role in support of the overall Coast Guard objective which is to ensure the safe and expeditious movement of shipping in the Canadian Arctic. Throughout the season, Coast Guard radio stations provided ice, weather and other navigational information and maintained a continuous listening watch for distress or safety calls.

Looking to the future and the ever-increasing importance of good communications in support of oil and gas shipments from the Arctic, the Coast Guard recently carried out a comprehensive study of Arctic communications. The recommendations of this study form the basis of extensive planning to ensure that future communications requirements in the Arctic are met.

In 1982, the Coast Guard carried out preliminary site surveys as a first step in upgrading the periodic radio beacons on the Labrador coast and Hudson Strait areas.

Seven Canadian Coast Guard ice-breakers and one ice-strengthened vessel were deployed to the 1982 northern operations. Their tasks were to support commercial shipping and carry out special projects on behalf of government departments — principally hydrographic, oceanographic and scientific surveys for the Department of Fisheries and Oceans and the Department of the Environment.

#### **National Harbours Board**

The National Harbours Board leases facilities to the Northern Transportation Company Limited (NTCL) for its barge re-supply operations to communities on the west coast of Hudson Bay. The Board also provides facilities and services for loading overseas commercial grain shipments. In the 1979 and 1980 shipping seasons, weather conditions permitted the Port of Churchill to load grain aboard the MV Arctic until November. However, shipping operations in 1981 and 1982 were restricted to the normal season.

#### *Harbours and Ports Directorate*

CMTA administers certain public port facilities north of 60°51', particularly along the MacKenzie River system and in small coastal communities from Amundsen Gulf to Ross Strait in the Western Arctic. These facilities are in addition to those provided by the private sector. Facilities in the Western Arctic, particularly along the MacKenzie River system, are generally suited to shallow draft barge traffic. There were no major changes to these facilities in 1982, and none are planned for 1983.

Two public harbours are located in the Eastern Arctic: Nanisivik in Strathcona Sound on Northwestern Baffin Island, and Frobisher Bay in the southern part of Baffin Island. Last year was the fourth full operating season for the Nanisivik facility, which consists of three large-diameter steel sheet pile cells with concrete caps and gravel cargo working areas. Nanisivik Mines Ltd. has provided a shiploader and conveyor system for loading mineral products. The system can be used by vessels of up to about 50 000 tonnes deadweight.

Frobisher has anchorage berths in Koojesse Inlet. This anchorage is subjected to strong tidal runs and is dangerously exposed to north and south winds. In the event of a storm warning, vessels must be prepared for a quick departure. Because the facility has no pier, ships must unload and load all general cargo by means of landing craft that shuttle between ship and shore.

#### *Research and Development*

The Canadian Marine Transportation Administration carries out Research and Development (R&D) in transportation and its related technologies.

Marine R&D is directed toward both increasing the safety or technological efficiency of marine transportation, and determining technically feasible alternatives to help meet particular program objectives. The Administration's primary purpose in carrying out R&D activities is to implement regulations, improve statutory services or introduce new ones. Where Transport Canada augments the efforts of either other departments, the provinces or the private sector, it carries out R&D to help solve transportation-related problems in areas of pressing national concern — particularly industry growth, regional development, training and productivity.

The marine R&D program involves activities with other governments, industry and universities, as well as other departments and agencies of the federal government.

It focuses on areas of marine technology that are critical to enabling the Administration to fulfill its mandate. Specifically, R&D concentrates on technology related to:

- vessels (standards and regulations);
- navigation and communications systems;
- emergencies, salvage, and search and rescue;
- pollution prevention and cleanup; and
- marine terminals.

In 1982-83, marine R&D continued to focus on energy, security, sovereignty and safety. Several major projects have been started under the \$14 million three-year Arctic Marine R&D Program announced in 1981-82. These include a one year \$5 million sub-program to conduct R&D using the MV Arctic, Canada's only ice-strengthened bulk carrier. The research areas included in this sub-program are navigation in ice, ice regime studies, systems for detecting ice hazards, water ballast re-distribution, and recovery of waste heat.

The Administration is planning to evaluate the three-year Arctic Marine R&D program, and is developing a second phase that may extend to 1984-85 and 1985-86.

In 1982-83 a major activity has been the development of an East Coast Marine R&D Plan. The Plan will promote the development of a transportation system to support various expected resource developments in the Labrador Sea, offshore Newfoundland and the Scotian Shelf. A working paper was released in December 1982 to solicit comments.

In 1982-83, the Administration co-operated with the United States to promote marine transportation R&D. This co-operation involved exchanging information carrying out joint research projects on navigation in ice, vessel vibration and stress. Canada also agreed to study the feasibility of co-operating with Japan on Arctic Marine R&D. In addition, Canada is negotiating a memorandum of understanding with the Finnish government to provide for co-operation in this field of research.

CMTA is also carrying out a wide range of projects in co-operation with the marine shipping and shipbuilding industries. While many projects apply primarily in areas south of 60°, a number have universal application.

The Marine Advisory Board is CMTA's primary link with the industry, and it provides direct feedback on the industry's concerns in the Arctic and elsewhere. Under the Board's auspices, CMTA has undertaken significant new R&D activities directed toward finding methods of detecting ice hazards and developing remote ice sensor systems. Other work has included ship ballasting under varying ice conditions, corrosion, systems for reducing friction, and new technologies for paving terminals and controlling ice in harbours.

#### **Polar Icebreaker Program**

Two contracts awarded in 1981 to the Montreal firm of German and Milne, Naval Architects, have been completed. One contract was to update the design of a Polar 7 icebreaker to enable it to meet Arctic Shipping Pollution Regulations for a Class 8 icebreaker. Another contract valued at \$136 000 was awarded for a detailed design and computer simulation of an alternative propulsion system for the vessel.

In view of the six-year lead time needed to construct the Polar 7 icebreaker, Transport Canada will ask approval to proceed with funding proposals for construction from the three Canadian shipyards capable of building this ship: Saint John Dry Dock and Shipping, Davie Shipbuilding, and Burrard-Yarrows.

#### **Development of the Coast Guard Northern Bureau**

In preparation for establishing an Arctic Region, the Marine Administration in Transport Canada has developed a plan for co-ordinating and managing all Coast Guard activities in the North. (The North in this context is defined as all Canadian waters North of the 60th parallel.) The plan will ensure that a single agency will be responsible for planning and directing the operation of all northern facilities and services that the Coast Guard is required to provide through various Acts, Regulations and Cabinet Directives.

The Environmental Assessment Review Panel report on the northern segment of the Arctic Pilot Project pointed out the need for an Arctic Shipping Control Authority under the responsibility of Transport Canada. This recommendation was accepted, and the responsibility for its implementation was delegated to the Coast Guard. The role of this Control Authority will be to develop ship routing and traffic management systems that will both enable ships to operate safely in the Arctic, and protect the environment.

The development and implementation of the Authority will be "phased-in" in five stages to coincide with projected Arctic marine transportation needs. Uncertainty exists, however, about when these needs will arise. Current planning is based on industry projections for shipping oil from the Beaufort, followed closely by a renewed project for shipping Liquefied Natural Gas from Melville Island. To provide flexibility, the last phase for the Control Authority, tentatively set for 1987-88, could be advanced or delayed to co-incide with updated industry projections.

#### **The CCGS des Groseilliers**

On August 7, 1982, Mme. Jean-Luc Pepin, wife of the Transport Minister, officially named the 6 600-tonne des Groseilliers, the third of a new generation of Canadian Coast Guard icebreakers. The ceremony took place at Port Weller Dry Docks.

After going through its sea trials, the \$64 million vessel will join the Pierre Radisson at Québec City. During the summer months, the des Groseilliers will be used in the Arctic, where her cruising range of 15 000 nautical miles will be an advantage. She will provide icebreaker service to other vessels and assist in hydrographic and other scientific work.

The des Groseilliers can cruise at more than 13 knots and is capable of moving continuously through ice as thick as one metre. In emergencies, she can stop within 60 seconds from full speed and has full search and rescue capability, including a helicopter normally used for ice surveillance and patrol. The vessel replaces the CCGS d'Iberville, which has been decommissioned after more than 30 years of service.

## **Canadian Surface Transportation Administration**

### *Surface Policy, Planning and Urban Programs Branch*

The Branch manages the Urban Transportation Assistance Program (UTAP), which shares the cost of studies and capital works to improve the efficiency of urban transportation systems.

#### ***Review 1982-83***

A bus, previously provided to the town of Hay River, N.W.T., was declared surplus and transferred to the City of Whitehorse.

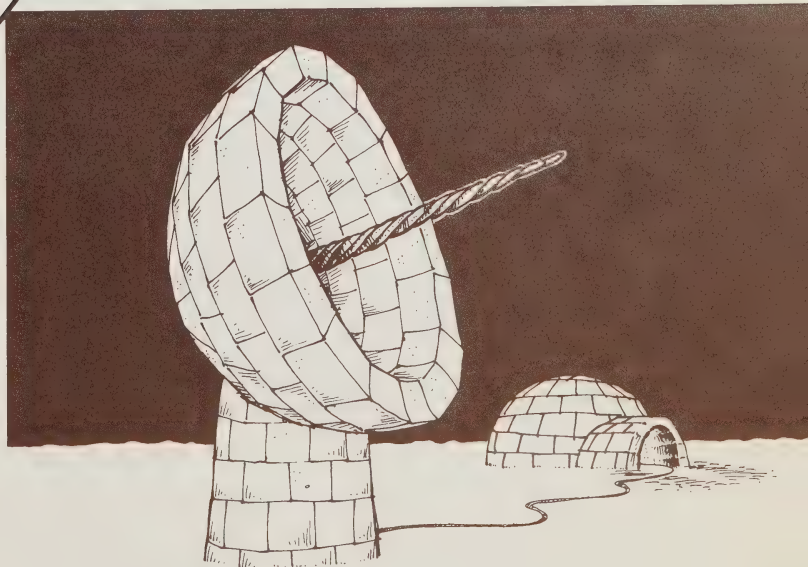
### *Water Transportation Assistance Directorate*

The Water Transportation Assistance Directorate subsidizes essential water transport services for which it would be impractical to recover all costs from those who use them. .

#### ***Review 1982-83***

The Directorate's main Arctic activity is to subsidize barge services provided by Northern Transportation Company Limited (NTCL) from Churchill to the Keewatin ports. In 1982-83, this subsidy amounted to \$1 125 000.

# Communications



# Canadian Broadcasting Corporation

## The Challenge

Providing national and regional CBC services to the people of the Northwest Territories and Yukon is a demanding task. The size alone of the Arctic presents a formidable challenge. Fully one-third of Canada's land mass lies north of the 60th parallel. It is spread across four time zones, and is largely inaccessible by road.

The changes going on in the Arctic today pose an equal challenge. Large-scale industrial development, the growth of regional self-government and the pending settlement of major land claims all contribute to profound changes in the lives of Canadians throughout the North.

The CBC recognizes that residents of the North share a need for regular daily news broadcasts — both region and national — and for balanced public debate of all major issues. The North has few independent news or other media operations. The only way that all northern residents can have access to high-quality, northern regional newscasts and information programs is through the CBC.

## Radio Background

The year 1983-84 marks the 25th anniversary of CBC Northern Service Radio. Beginning with a handful of local radio stations turned over to the CBC in 1958 by the Department of National Defence, the Northern Service has grown to five regional production centres — one in Yukon and four in the N.W.T. Each has a chain of relay transmitters in outlying settlements and towns. Fully 97 per cent of northern Canadians receive complete daily radio service that includes national network and regional programming tailored to their areas. Broadcasts are carried in English and seven native languages. Many northern locations also have community radio societies that have access to local relay transmitters at specified times each day for local program production.



Cameraman Bob Landy films sealing boat for television series about lifestyles in the North.

Credit: Robin Barber

## Radio Highlights 1982-83

Increasing emphasis was placed on pan-northern programs, which link all regions of the North in a common presentation of major events and issues. The Northwest Territories' public plebiscite on the question of dividing the N.W.T. into two new territories received major radio coverage, as did the historic First Ministers' Conference on Aboriginal Rights. In addition, the sessions of the Legislative Assemblies of both Territories were summarized and broadcast daily to all northern regions in English and native languages.

In recognition of the annual summer up-surge in tourism and other activity in Dawson City, CBC Yukon established a summer news bureau there. A full-time news editor from the Whitehorse production centre was assigned to file regular reports for the Yukon network from Dawson City.

The Yellowknife and Whitehorse stations both expanded their afternoon programming for the native people of their regions. The Rankin Inlet production centre began to produce a new noon hour information program in Inuktitut for listeners in the Keewatin.

A great deal of activity took place in entertainment and arts programming. The Northern Service presented a pan-northern Fiddle Festival in Whitehorse, featuring the best fiddlers from both Territories—and from Northern Quebec and Alaska. The festival drew sell-out crowds. Rankin Inlet hosted a "True North" concert, with a blend of northern and southern musicians. Six new broadcast recordings of regional performers were produced, and arrangements were completed to market some of the Northern Service broadcast recordings commercially.

During the year, the Northern Service provided a wide range of training courses. Slavey and Inuit staff participated in one-week courses in teaching native language and journalism skills. Instruction in audio production, legal issues for broadcasters and current affairs production was also made available to appropriate staff at each station. Workshops in cross-cultural orientation were offered to staff at northern locations and headquarters.

Technical assistance was provided to the affiliate stations at Baker Lake and Tuktoyaktuk. A new installation for receiving both radio and television signals was completed in Gjoa Haven. Radio reception at Fort McPherson was improved through equipment for picking up satellite transmissions.

### Television Background

Although CBC network television programming is available to about 97 per cent of the northern audience through satellite transmission from Toronto, the challenge is to supplement these programs with an adequate regional service – particularly northern regional information programming. To help meet this need, the Northern Service operates a television production centre, located in Yellowknife. It has a staff of 13, electronic and film cameras, and editing facilities. As yet, however, there is no video up-link available in Yellowknife, and so programming produced there must be flown south or broadcast back to the North via satellite.

### Television Highlights 1982-83

Yellowknife inaugurated a weekly half-hour current affairs series entitled *Focus North*. The program uses portable electronic cameras and equipment and travels throughout the North to produce timely information programming on major northern issues. The program has looked at the impact of the world wide recession on the economy of the North, the future of the educational system in the N.W.T., the progress of land claims in Yukon and many other crucial current events. *Focus North* has drawn an appreciative northern audience. A number of southern regions are also carrying material from the series. The program is carried in the eastern part of the N.W.T. with Inuktitut and English soundtracks and, in the western half, with English and Slavey versions.

In January 1983, a second Yellowknife-produced half-hour series was launched. Called *Northland*, the series replaces the previous *Our Ways* programs, and documents in film the cultural heritage and traditional lifestyles of northern people. Half of the 13 episodes of *Northland* for this year are produced by the CBC. The rest are co-produced with independent film-makers. Like *Focus North*, *Northland* is broadcast in English, Inuktitut, and a Dene language.

The Northern Service continues to produce a weekly quarter-hour Inuktitut program entitled *Tarqavut*. During 1982-83 the production of *Tarqavut* was moved from Montreal to Ottawa, as part of the integration of the southern television operations, which handle scheduling and public service announcements and produce station breaks.

The CBC has continued to share its television distribution facilities in the eastern half of the N.W.T. with the Inuit Broadcasting Corporation (IBC), an independent native production company that produces five hours of Inuktitut television each week from studios in the N.W.T. and Northern Québec. IBC operates a video up-link in Frobisher Bay from which it has access to the CBC satellite channel at specified times to distribute its programs to about 30 Inuit communities in Labrador, Québec, and the Northwest Territories.

### NorthwesTel

In 1982-83, CN's telecommunications subsidiary, NorthwesTel Inc., upgraded its equipment and expanded service in various locations. Solid-state local digital exchanges were installed in the communities of Fort Smith and Coppermine, N.W.T. Local and long distance telephone services were provided to the isolated communities of Lac La Martre and Rae Lakes, N.W.T. These projects were carried out with financial assistance from the Department of Communications under the Northern Communications Assistance Program.

Local telephone exchange service capacity was expanded at a number of communities including Faro, Norman Wells, Dawson City and Cassiar.

A multi-phase program for providing Automatic Number Identification (ANI) continued throughout 1982. Communities provided with this service in 1982 included Fort Simpson, Pine Point, Dawson City, Norman Wells, Watson Lake and Coppermine.

Touch-tone service was provided to Aklavik, Cambridge Bay, Fort McPherson and Rae in 1982. Zero-Plus Dialling was extended to a number of communities including Fort Smith, Hay River, Norman Wells, Faro, Inuvik and Pine Point.

Remote test equipment that allows technicians to test subscriber lines from the Central Service Office in Whitehorse, have been installed in all of the larger communities that the Company serves, as well as in a number of smaller locations. In 1982, NorthwesTel installed this equipment at Inuvik, Hay River, Fort Simpson, Pine Point and Tuktoyaktuk.

Work continued on expanding and upgrading the Whitehorse – Mount Berdoo (near Carmacks) microwave system. When completed in 1983, the system's capacity will have been expanded from 300 to 960 voice channels.

The upgrading of the Whitehorse – Mount Dave (near Beaver Creek) microwave system was completed in 1982. Solid state equipment was installed to replace obsolete units.

# Canada Post Corporation

Northwestel completed a new, 1800 voice channel solid-state microwave system from Whitehorse to the British Columbia - Alaska Panhandle border. This new system will operate in conjunction with the upgraded Whitehorse - Mount Dave system and will enable Northwestel to meet a major commitment to Alascom Inc. to provide high quality communication facilities over the next ten years, equivalent to 1380 voice channels.

*Statistics at Dec. 31, 1982*

	Telephone Exchanges	Main Stations	Total Telephones
B.C.	11	3 241	5 566
Yukon	18	10 255	16 638
N.W.T.	34	13 621	22 844
Total	63	27 117	45 048

Communities Served 59

DDD Access 99.9%

ANI Availability 85.9%

Touch-tone Availability 91.9%

## Plans for 1983-84

Northwestel has a variety of plans for 1983-84. A new computer system has already been purchased and is being installed at Northwestel's headquarters located in Whitehorse. The system will provide a paperless method of managing information such as cable records, customer service orders, and Directory Assistance.

A new electronic digital local and long distance telephone exchange will be installed at Fort Nelson, B.C. in 1983, and another at Inuvik in 1984.

A major microwave repeater serving the Mackenzie Delta will be relocated in 1983 to a new site about 32 kilometers west of its current location. The present site is the main junction of the microwave and troposcatter systems serving the Delta and is accessible only by helicopter. However, the new location will be accessible by road, making the site more accessible for service personnel.

In 1983, living quarters and a workshop will be constructed at Tuktoyaktuk to accommodate a new resident technician to service oil and gas exploration companies in the Beaufort Sea area.

New telephone exchanges will be installed in 1983 in the communities of Old Crow, Tagish, Spence Bay, Pelly Bay, Gjoa Haven, Paulatuk, Arctic Red River, Dease Lake and Iskut.

Automatic Number Identification will be provided at Haines Junction, Cambridge Bay, Mayo, Elsa, Tungsten and Rae.

## Responsibilities

The former Canada Post, which had operated as a government department since 1867, was proclaimed a Crown corporation on October 16, 1981. Like its predecessor, Canada Post Corporation is actually a huge processing and distribution business.

The Corporation provides basic mail coverage to all Canadians at the same cost, not only along the well-established transportation networks in the south, but also to the remote areas north of 60 degrees latitude. There are now 81 post offices in the North.

Mail is delivered by a variety of means. For example, some communities receive their mail by road, while others rely on permanent year-round air strips for mail delivery. In other locations, aircraft land on ice strips to deliver mail in the winter months. In the summer, float-equipped aircraft provide mail service. During the spring break-up and the fall freeze-up, flights to these communities are curtailed for varying periods. Some northern residents receive their mail by courtesy-bag service, i.e., the Corporation processes the mail and places it in bags for mining companies or oil exploration companies to deliver to their personnel.

During navigation season in Arctic waters, Canada Post Corporation is responsible for delivering mail to ice-breakers operated by the federal government. Mail is forwarded from Ottawa to predetermined points, where it is picked up by helicopters operating from the ice-breakers.

Two postal regions are responsible for providing mail service in the North. The Québec Region is responsible for service to the Eastern Arctic, with Montreal serving as the distribution centre. Mail originating east of Winnipeg and addressed to Kuujuaq (electoral district of Manicouagan), Frobisher Bay, Hall Beach or Resolute, is sent to Montreal, where it is processed and then forwarded by air. Mail originating west of Winnipeg for the Eastern arctic is gathered in Edmonton for dispatch by air to Resolute.

# Department of Communications

The Western Region is responsible for providing postal service to communities in Yukon, the District of Mackenzie, and the District of Keewatin, as well as Banks Island, Victoria Island, and the Boothia Peninsula in the District of Franklin. The post office at Sanikiluaq, Belcher Island, is south of the 60th parallel, but since it is an island in Hudson Bay, it is served by the northern service. Mail for the Keewatin District from all parts of Canada is sent to Churchill for distribution. Dispatches for the District of Mackenzie are centralized and processed at Edmonton. Mail for Yukon, depending on the originating point, is centralized in either Edmonton or Vancouver.

## Review for 1982-83

Activity in Yukon during the period has been limited. The economic decline in the mining industry has resulted in layoffs and population shifts. Postal service has been reduced in Elsa, Tungsten, and Faro, and have transportation services to these communities.

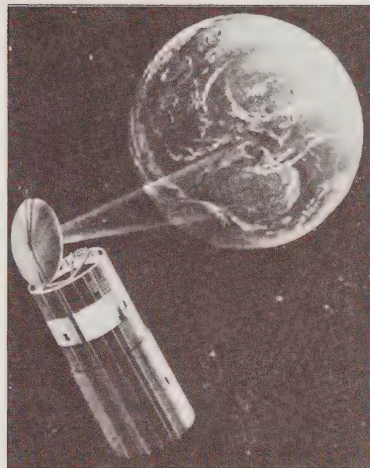
While business activity in Yukon has generally declined, Canada Post Corporation extended its Priority Post service to Whitehorse to provide courier service to businesses still operating in the Territory.

During 1982-83, the Corporation arranged to centralize at Yellowknife outgoing mail from the Mackenzie River district destined for points in the Eastern Arctic. This routing will help to improve mail between the Western and the Eastern Arctic.

As in the Western Arctic, postal activities in the Eastern Arctic in 1982-83 were largely directed to improving existing services.

## Plans for 1983-84

Canada Post Corporation will continue to work closely with local agencies to improve current services and introduce new ones to meet customer needs.



Television programming is being carried out on the 14/12 GHz band used by Anik-C.

## Responsibilities

The Department of Communications, in fostering the development and operation of telecommunications for Canada, acknowledges the particular needs of northern Canadians. DOC promotes the development of efficient northern communication facilities and helps northern Canadians adjust to rapidly changing conditions.

## Review 1982-83

Throughout 1982-83, the Department was involved in both experimental and operational activities in the North, and it participated in a number of joint ventures with other government departments and private groups.

The Department maintains its role as co-ordinator of northern communications planning. Much of the Department's involvement is administered through various committees in the two territorial capitals, Whitehorse and Yellowknife. The DOC district manager for Yukon is a member of the Federal Interdepartmental Co-ordinating Committee (FICC) in Whitehorse and chairs the Communications Sub-committee of the FICC. The DOC Central Region director who holds responsibility for the N.W.T. and the prairie provinces is a member of the N.W.T. Co-ordinating Committee in Yellowknife. He

chairs that Committee's Standing Group on Communications, which established a task force to study government communications in the N.W.T. The study report will present its findings and recommendations on the possibilities of combining northern communication systems and on other methods of improving quality and cost effectiveness.

In 1982-83, the Central Region continued to participate with the Department of Employment and Immigration in the Summer Job Corps. DOC has found this shared program useful in providing basic training in communications and in introducing young people to the potential of a career in communications. The program operates in Northern Manitoba, Saskatchewan and Alberta as well as all across the N.W.T. It is completely decentralized to the District Office level within the N.W.T. Over the years, DOC has been successful in creating N.W.T. communications training positions, many of which have been filled by native students.

These projects have helped the Department to meet its objectives of using more people from northern communities in northern communications. The long-term potential of the Summer Job Corps lies not only in finding new staff, but also in reducing unemployment and creating new career opportunities.

Over the last four years, the Department has been involved in several experiments using the Anik-B satellite. These experiments have had significant implications for the extension of basic television services in the far North.

A third major Anik-B satellite experimental program that relates directly to the North, involved testing the feasibility of sending two channels of television programming via one satellite transponder to small 1.8 metre satellite ground stations. Because of the higher powered Anik-B satellite facilities, the system uses a new generation of low cost receivers and, accordingly, is suitable for rural and remote areas. Although the experiment was directed primarily to delivering television signals to British Columbia audiences, the Department installed satellite television "receive-only" earth stations (TVROs) in Yukon at Whitehorse, Johnsons Crossing, Eagle Plains, Watson Lake, Cross River and Stewart Crossing.

It also installed this equipment in the N.W.T. at Yellowknife, Fort Providence, Inuvik, Fort Simpson, Echo Bay, Norman Wells, Fort Smith and Taltson River. DOC's involvement in the project ended in September 1982, at which time arrangements were made between Telesat Canada and the Knowledge Network in British Columbia to continue transmitting the KNOW programming on an interim commercial basis. The programming was later transferred to Anik C-3 in February 1983, when that satellite became operational.

On March 1, 1983, the Minister of Communications announced a new National Broadcasting Policy. It will provide Canadians with a wider choice of programs and will strengthen Canadian programming. It also removes a number of previous restrictions on the use of dish antennas. Under the new Policy, exemption from licensing under the Radio Act extends to individuals and certain types of commercial establishments, such as bars and hotels, as long as the signals captured are not redistributed. Before the new Policy came into effect, the exemption applied only to "resource camps", such as those in the forestry, mining and petroleum industries.

On March 10, 1983, the Government of Canada announced the Northern Broadcasting Policy and its accompanying Northern Native Broadcast Access Program. Northern natives will receive \$40.3 million through a four-year program to be administered by the Secretary of State. This program will enable the Inuit to maintain the broadcasting services they have already established and will provide Indian and Métis communication societies with an opportunity to initiate equivalent radio and television services for native audiences in the Yukon, Northwest Territories and the northern regions of seven provinces.

Canadian Satellite Communications Inc. (CANCOM) currently distributes television and radio programming through its affiliates to more than 700 communities across Canada, and it is continuing to expand the area it serves. Some fifteen localities in the Northwest Territories and Yukon receive CANCOM's programming. During the CRTC public hearing at which CANCOM defended its application, the Company agreed to fulfill a number of licensing conditions. Among them was a commitment to develop native broadcasting services in the North.

On March 8, 1983, the CRTC made public its decision to grant CANCOM four additional television channels to distribute signals from American networks. This approval means that CANCOM now has signals from eight television channels (four of which are American) and ten radio stations that it can distribute to remote and under-served communities.

During a public hearing on March 18, 1982, the CRTC announced its decision to allow the introduction of pay television in Canada. Eleven months later, the Commission approved an application to offer a regional general interest pay television service to the inhabitants of British Columbia and Yukon. All of these developments represent a remarkable improvement in the programming available to these communities in just a few years. To a large extent, the newest service reflects the main principle of the Northern Broadcasting Policy — to provide northern citizens with a wider choice of radio and television programs.

The Department has produced a guide aimed primarily at community groups interested in obtaining a licence to redistribute satellite programming. The guide contains information on applying for a licence and on the technical requirements for earth stations and radio or television distribution systems in remote communities.

The CRTC has issued several broadcasting licences to communities in the Northwest Territories. This licensing has increased access to radio and television programming provided by the CBC and has contributed to the development of community radio and television stations.

On December 14, 1982, the Commission announced the licensing of a French-language television station, which will rebroadcast programming received by satellite from the CBC's French-language television network to the residents of Frobisher Bay in the Northwest Territories. also announced on May 18 and July 22, 1982 and on January 31, 1983 approval of broadcast licence applications by three English and native language FM radio stations in Pelly Crossing, Old Crow and Ross River in Yukon. These community radio projects will provide an important service and an opportunity to develop programming that reflects the way of life of members of these communities.

The Commission also renewed the licences of the television stations serving Tungsten, Strathcona Sound, Cambridge Bay, Coppermine, Fort McPherson, Fort Providence, Fort Simpson, Fort Smith, Hay River, Inuvik, Norman Wells, Pine Point, Rae Edzo, Spence Bay, Tuktoyaktuk, Yellowknife, Baker Lake, Cape Dorset, Eskimo Point, Frobisher Bay, Pangnirtung, Pond Inlet, Rankin Inlet, Resolute and Coppermine in the Northwest Territories.

The Commission also approved amendments to the broadcasting licences of radio stations serving Fort McPherson, Pond Inlet, Pangnirtung and Fort Norman to permit broadcasting of community programming to these towns and villages in the Northwest Territories.

During the past year, the Department of Communications has worked closely with the CBC Northern Service. Both DCC and CBC support more native television training and production. The activities of the Northern Service are directed specifically at providing a broadcasting service that meets the special needs of all northerners, and are described in full in the CBC section of this publication.

The Department of Communications continues to be responsible for handling aspects of authorization, licensing, frequency assignment and spectrum management under the Radio Act. In the North, the District Offices in Yellowknife, Fort Smith and Whitehorse provide this service. The Fort Smith Office also operates a monitoring station.

The telephone service of Bell Canada and NorthwesTel continued to improve throughout the North. Telesat installed a permanent "Thin Route" message service in Eureka. The expansion of this service continued during the year, with 36 new telephone circuits being added to provide service to 21 communities. North-to-North telephone services were also provided between some of these communities. Coupled with this expansion of voice circuits teletype services were installed at various locations. The CANCOM service was transferred to Telesat's new satellite link D-1 during the fall. This service is available to a number of communities in the North, including Cambridge Bay, Yellowknife, Aklavik, Fort Simpson, Hay River, Fort Smith, Pine Point, Frobisher Bay, Inuvik, Dawson City, Whitehorse, Watson Lake, Faro, Takhini, McPherson, Wolf Creek and Carcross Corners.

Bell Canada continues its policy (begun in 1978) of providing Inuit subscribers with facsimiles of their monthly bills in Inuktitut. Bell also continues to distribute a trilingual telephone directory (Inuktitut, English, French), complete with maps and illustrations. Where possible, the book uses a community's local dialect.

Whale Cove, Chesterfield Inlet and Foul Bay received the new DMS-10 D.O. - "Small Dial Office" machine — part of more than ten years of effort to replace older, less reliable switching equipment in the North. The "Small Dial Office" machine is one of a new family of entirely digital switching machines designed by Bell Northern Research and manufactured by Northern Telecom. The installation of these machines at the above locations marks the end of Bell Canada's expansion program in the North.

NorthwesTel continues to provide a full range of telecommunications services throughout Yukon and the western part of the N.W.T. In 1982-83, the Company's operations and services were expanded in several areas throughout the North. For example, NorthwesTel has installed solid-state local digital exchanges in the communities of Fort Smith and Coppermine. Local and long distance telephone services were provided to the isolated communities of Lac La Martre and Rae Lakes, and local telephone exchange service capacity was expanded in a number of communities, including Faro, Norman Wells, Dawson City and Cassiar. Finally, remote test facilities that permit technicians to test subscriber lines from the Central Service Office in Whitehorse have been installed. Equipment is now located in all of the larger communities that the Company serves, as well as in a number of smaller ones. More specific information on these recent improvements is outlined in the section on NorthwesTel Inc., included elsewhere in this publication.

In 1982-83, the federal government contributed \$286 000 toward improving telecommunications services in the N.W.T. This money was provided under the Northern Communications Assistance Program (NCAP) and the Minimum Annual Revenue Guarantee Agreement.

The Northern Communications Assistance Program, announced in January 1977, will now total \$5.6 million in federal contributions. These contributions cover the capital cost of communications facilities required to bring reliable, long distance telephone service to the Northwest Territories. Bell Canada and NorthwesTel are investing a similar amount for local exchange equipment. Satellite ground stations or ground-based circuits are providing the long distance links. NCAP does not affect Yukon because all Yukon communities already have good basic telephone facilities.

During the 1981-82 fiscal year, DOC established the Public Initiatives Program (PIP) to support non-profit groups wishing to use Telidon, the two-way television technology. The objective of this program is to contribute to creating appropriate data bases for special interest groups such as Inuit and Native organizations. During the 1982-83 fiscal year, the Council for Yukon Indians, one of twelve groups that received funding from PIP, successfully established an independent electronic publishing service. It gives native people in Yukon access to information on

flight arrivals and departures, educational and recreational programs, as well as native legal information. For their part, the Inuit Tapirisat of Canada (ITC) have completed a feasibility study on the potential of Telidon technology for Inuit in Northern Canada. The ITC are confident that videotex will prove to be a valuable communications tool for the Inuit. All funding for PIP projects from DOC is expected to end by March 31, 1983. Both the Council for Yukon Indians and the Inuit Tapirisat of Canada plan to continue their projects with financial support from other sources.

#### *Plans for 1983-84*

The Department of Communications will remain committed during the 1983-84 year to doing everything within its mandate to promote communication services throughout the North. It will, moreover, continue to encourage the development of more northern and native programming on radio and television services in the region. The new National Broadcasting Policy and the Northern Broadcasting Policy represent important steps toward achieving this objective. As mentioned earlier, one policy offers, among other things, greater access to radio and television programs distributed via satellite, while the other represents a new source of funding that will enable Indians and Métis to produce radio and television programming for native communities in the far North.

The shared Summer Job Corps program of the DOC Central Region and Employment and Immigration will be continued again in 1983. Support will also be available to the Adult Vocational Training Centre at Fort Smith, N.W.T. for more training in electronics. This training will enable graduates to meet the Public Service Commission's requirements for employment within the Public Service. Graduates will, therefore, be qualified to fill existing or new positions as they become available.

In the 1983-84 fiscal year, the CRTC expects that it will continue to authorize broadcasting proposals in northern communities to distribute the satellite-delivered CANCOM television and radio service and Canadian pay television services.



# Economic Development (Human)



# Department of Indian Affairs and Northern Development

## Northern Affairs Program

### Northern Policy and Coordination Branch

#### *Social and Cultural Development Division*

##### **Responsibilities**

The Social and Cultural Development Division administers programs that support the social and cultural development of Inuit and other northern native people. The Division has five sections:

- Native Liaison
- Inuit Art
- Cultural and Linguistics
- Vocational Training
- Loan Fund and Administration.

The *Native Liaison Section* provides a link between the federal government and northern native people. It arranges funding for consultation with native groups on northern development concerns and interests.

The *Inuit Art Section* is the central agency dealing with all aspects of Inuit art. It provides professional assistance to art-producing co-operatives. In particular the Section has worked with the Canadian Arctic Producers Co-operative and La Fédération des Coopératives du Nouveau Québec, to develop markets for northern art and crafts. It has Category "A" designation under the Cultural Property Export and Import Act, allowing it to receive donations of certified Inuit Artworks.

The Section conducts research and prepares publications (including a newsletter "About Arts and Crafts"), provides information to institutions and the public, and carries out a national and international exhibition and lecture program.

The Canadian Eskimo Arts Council, appointed by the Minister, provides advice on the orderly development of Inuit arts and crafts and helps artists to protect their work through copyright.

The *Culture and Linguistics Section* provides translation service in a variety of Inuktitut dialects and orthographies, publishes a quarterly magazine "Inuktitut", and administers a grants program that enables Inuit to participate in a wide range of cultural activities. The Section also provides support to Inuit filmmakers, television and radio producers; and promotes the development of literature and language. Finally, the Section administers the Department's funding activities in connection with the Inuit Cultural/Education Centres in the N.W.T. and Labrador.

The *Vocational Training Section* provides counselling services to northern native students in southern Canada and operates Inuit House in Ottawa. It administers an on-the-job training program to increase northern native employment, provides apprenticeship training to northern people, and arranges special training programs.

The *Loan Fund and Administration Section* provides a number of special services and is responsible for policy relating to the Eskimo Loan Fund. It also co-ordinates the fund with other financial assistance programs and administers a multi-year Co-operatives' Development Program.

##### **Review 1982-83**

The Division continued to support a number of efforts relating to the activities of the Beverly and Kaminurik Caribou Management Board. The Governments of Canada, Manitoba, Saskatchewan and the Northwest Territories established the Board to manage barren-ground caribou migrating across Provincial and Territorial boundaries. In 1982-83, the Division concentrated on involving native people in herd management and on providing information and educational programs.

More than \$970 000 was lent to Inuit and Inuit-controlled business organizations in 1982-83. An additional \$1.8 million was paid in economic development contributions. Guarantees were provided for \$5.1 million in commercial bank loans.

The Division evaluated the impact of the Department's five-year Co-operatives Development Program and made recommendations for the future. In 1982, co-operatives in the N.W.T. and Northern Quebec did \$34 million in business and paid out more than \$11 million in wages and other payments. During the year, the Canadian Arctic Producers Co-operative (CAP) amalgamated with the Canadian Arctic Co-operative Federation of the N.W.T. The organizations continue as Arctic Co-operatives Limited. To facilitate the amalgamation, the federal government transferred its remaining shares in CAP to the Inuit co-operatives. These shares had a book value of \$406 465.

A comprehensive study of the production and marketing of Inuit carving began this fiscal year. A research contract covering the protection of Inuit art was awarded to Inuit Tapirisat.

As part of the Social and Cultural Development Division's program of support for Inuit art, a guide to the Department's collections and services has been prepared. It will be distributed to cultural agencies to inform and encourage potential exhibitors and to increase the public awareness of the unique art of the Inuit.

Highlights of the current exhibition program included a major exhibition of sculpture and graphics at the Native American Centre for the Living Arts, Buffalo, New York; a graphics exhibition in Fort Smith; and public lectures in Halifax, Québec City and Calgary.

Two special editions of "About Arts and Crafts" were published. One featured a survey of crafts made by Inuit, and the other presented a comprehensive bibliography on Inuit art for use by both general readers and specialists.

In conjunction with the Canadian Eskimo Arts Council, the Division sponsored a two-day conference for curators and specialists who work with Inuit art. More than 60 professionals from across Canada and the U.S. attended, and an account of the proceedings has been published.

A two-year program was begun with the Holman Eskimo Co-operative to catalogue and photograph its collection of over 8 000 original Inuit drawings. A similar project was also completed with the Prince of Wales Northern Heritage Centre to document its collection of 1,200 original drawings by Baker Lake artists.

### **Vocational Training Section**

More than 150 northern native people participated in on-the-job training programs during the year. Courses were conducted in syllabic touch typing, aircraft mechanics and pilot training. Over 100 northern native people received vocational counselling.

The Division held discussions with various agencies on either decentralizing certain programs carried out by the Vocational Training Section from Ottawa to regional offices, or transferring them to the Territorial Governments or native organizations.

# employment and immigration Canada

## Northwest Territories

The Yellowknife Canada Employment Centre (CEC) with a staff of 36, along with branch offices, serves about 30 settlements and a population of more than 100 000. The Centre is responsible for providing services to about two-thirds of the N.W.T. Services are largely directed toward government offices in the capital and the major mines, including two large gold mines in Yellowknife.

The CEC in Hay River has a staff of 10 and looks after a labour market area of about 48 000 km<sup>2</sup>, with a population of approximately 6 500.

A staff of seven at the Inuvik CEC is responsible for an area about one-sixth of the N.W.T. The combined population of 12 settlements it serves is approximately 7 300. The Frobisher Bay CEC is responsible for another one-sixth of the N.W.T. and serves 24 settlements with a population of more than 8 000. The staff is concerned with employment in the Inuvik Region and the employment associated with the development of a lead-zinc mine at Strathcona Sound.

From April 1 to December 31, 1982, the N.W.T. CECs recorded 4 386 new registrations, along with 3 705 registrations and 1 705 cancellations. In an effort to find work for registrants, the CECs referred 7 858 job seekers to 3 180 vacancies. More than 100 people were placed through these referrals.

The Employment Development Branch was active in the Northwest Territories in 1982-83. Round II of the Canada Community Development Projects (CCDP), provided \$736 575 in funding to create 173 jobs.

The Canada Community Services Projects complemented CCDP by creating 37 longer-term jobs at a cost of \$7 000. These jobs will last for three years.

The Local Employment Assistance Program (LEAP) spent about \$1.9 million to create 173 jobs. The activities funded involve a high proportion of native people and include training and the start-up of small businesses. It is expected that the number of projects and funding will remain unchanged in the next fiscal year.

Under the Summer Canada Program, \$866 890 was spent in 1982 to provide work for 473 people on 100 projects.

In 1982-83, under the New Technology Employment Program, one project created three jobs in Research and Development in communications technology with a federal contribution of \$45 325.

Job Creation under Section 38 of the Unemployment Insurance Act contributed \$265 000 to create 60 jobs in fisheries and forestry development for Unemployment Insurance claimants.

The Program for the Employment Disadvantaged is a new CEIC Program. It is designed to encourage private sector employers to hire people who have been unable to find continuing jobs because of either physical or mental handicaps or social or cultural barriers. The Program offers employers a three-phase wage subsidy incentive that ranges from 85 per cent to 25 per cent for up to 65 weeks. At the end of March 1983, it is estimated that five persons in the N.W.T. will have benefited from the program at an estimated cost of \$10 000.

The Commission has been active in promoting human resource planning and development in the N.W.T. and participated in negotiating the new Economic Development Agreement with the Government of the Northwest Territories. The Ministers of Employment and Immigration, and Indian Affairs and Northern Development signed the Agreement on behalf of the Government of Canada. Further negotiations are under way for a Subsidiary Agreement on Human Resource Development.

The new National Training Program replaces the Canada Manpower Training Program. It is administered under an agreement, signed August 21, 1982, between the Commission and the Government of the N.W.T. The agreement will remain in force until March 31, 1985.

During the fiscal year, the Commission purchased 57 000 training days from the N.W.T. Department of Education to provide skill development for 200 trainees, apprenticeship for 430 and academic upgrading for another 165 people. The Commission also allocated \$650 000 to provide training for natives that enabled them to take advantage of employment opportunities resulting from the expansion of oil refinery facilities and additional pipelines at Norman Wells.

The Canada Manpower Mobility Program (CMMP) helps workers to search for jobs and, if necessary, relocate. Under the Program, workers can accept temporary employment in other areas, travel to CECs for services not available in their home areas, and travel to training courses.

Under the CMMP, 15 persons received financial assistance to search for employment outside their areas of residence in the N.W.T. Sixteen people were relocated to employment, and three received special travel assistance to get to their new jobs. Another 16 workers travelling to temporary employment also received financial assistance. Total expenditure was approximately \$30 000.

## Plans for 1983-84

The Commission looks forward to continuing an excellent working relationship with the Government of the Northwest Territories and other federal departments active in the N.W.T.

Additional funds have been requested to meet the skill training needs that will result from the Norman Wells project. Canada Community Development Projects (CCDP) Round III, will extend into 1983-84, and about \$1.9 million will be spent under the Program to create more than 370 jobs in construction, housing and community services. The Canada Community Services Projects (CCSP) will also continue. The Local Employment Assistance Program (LEAP) expects its allocation level of \$1.9 million to remain the same, and that projects will be similar to those operating in this fiscal year.

Affirmative Action consultative services will be made available to northern employers through the regional offices of B.C. and Alberta.

## Yukon Territory

In its visits to employers, employer organizations and communities, the Department continued to emphasize both the need to develop the human resources potential of the Yukon, and the value of training Yukon workers and upgrading their skills.

Canada Manpower Consultative Service continued to work with the Yukon Labour Force Development Council. A Manpower Assessment Incentive Agreement is the basis for working with both the Government of Yukon and representatives of industry and unions. The goal is to determine how the Yukon labour force can best participate in any present and future economic growth.

The new National Training Program includes virtually all courses offered by the Territorial Government, both through the Yukon Vocational and Technical Training Centre in Whitehorse, and in outlying communities. In 1982-83, the Commission purchased approximately 45 000 training days under the National Training Act Agreement.

The National Industrial Training Program provided financial incentives to employers who hired and trained the unemployed and those with special needs. Employers also received incentives to upgrade the skills of those already employed. A total of 75 contracts were signed, covering training for 216 people.

Round II of the Canada Community Development Projects Program was completed in 1982-83 and created 80 jobs in Yukon at a cost of \$388 900. Round III began in the fall of 1982 and is expected to create more than 185 jobs with the funding level set at \$895 500.

The Canada Community Services Projects Program contributed about \$193 000 to create 29 jobs in Yukon in 1982-83. Many of these jobs will continue into the next fiscal year.

The Local Employment Assistance Program (LEAP) approved 6 projects, creating 44 jobs at a cost of \$835 000. Most of these projects are aimed at developing small businesses in woodworking, fishing and clothing.

Proposals worth \$870 800 were approved under Section 38 of the Unemployment Insurance Act. More than 300 jobs were created in forestry activities and in improving and expanding community facilities.

In 1982, Summer Canada funded 64 projects in Yukon. With funding of \$468 920, they provided summer work for 235 students.

The Canada Employment Centre for Students, which operated from February to September 1982, continued its successful policy of getting in touch with all post-secondary Yukon students about their summer employment needs. Suitable employment opportunities were identified, and two undergraduate students helped Yukon secondary school students apply for and find jobs. This was accomplished through visiting potential Yukon employers and secondary schools, providing short courses in job-hunting, and launching a public relations program. During the 1982 summer, 785 students registered for employment, and 572 found jobs.

The Program for the Employment Disadvantaged will, it is estimated, have benefited 67 persons by the end of March 1983, at a cost of \$125 000.

Approximately \$50 000 was spent in 1982-83 under the Canada Mobility Program to relocate 36 persons and to help with exploratory travel for 20 and travel to temporary employment for 2 others.

## Indian and Inuit Employment Assistance

The CEIC operates certain programs specifically for Native Canadians under its Native Employment Policy. Among them are the Native Internship Program and Training Opportunities for Natives (TONI). Under the Internship Program, the Department has spent \$4.8 million since 1980-81 to provide work experience within the CEIC to native students. This figure includes project totals of more than \$1.8 million for the fiscal year 1982-83 and involves 381 students.

Through TONI, another \$28 million has been spent to provide more flexible and innovative institutional and industrial training under the new National Training Program. Ten per cent of these funds was designated for projects initiated by native women.

Natives participate extensively in regular CEIC programs. Projected figures for 1982-83 for the Local Employment Assistance Program (LEAP) show an expenditure of \$26.9 million with 4 134 participants; Canada Community Development Projects, \$18 million with 6 701 participants; Canada Community Service Projects, \$1.5 million and 194 participants; Program for the Employment Disadvantaged, \$2.1 million with 806 participants.

Outreach enables non-profit, private sponsors to create employment agencies that provide employment services to recognized target groups. Native-sponsored projects received 38.3 per cent of Outreach funding in 1980-81 and 33.7 per cent in 1981-82. It is estimated that 31.7 per cent of Outreach funds for 1982-83 will be devoted to native-sponsored projects. In addition, Summer Canada, Local Economic Development Assistance (LEDA), and the regular National Training Program will be operating throughout both Yukon and the Northwest Territories.

The Department's Affirmative Action Program is one that provides certain indirect benefits, as opposed to direct benefits. In Affirmative Action, the CEIC enters into voluntary agreements with private sector companies to develop non-discriminatory hiring practices. There are 24 agreements that focus on Native Canadian as a target group. CCDDP, CCSP, and Summer Canada all require sponsors to provide hiring plans that outline their intentions to employ people from various target groups, including Native Canadians.

A Joint Working Group consisting of four representatives from the Native Women's Association of Canada and another four from the CEIC was established in 1981. As a result of the Group's report, the CEIC has hired 10 Native Women's Employment Co-ordinators. Eight work out of native women's affiliates across the country. The co-ordinators help native women to take advantage of the programs available to them and provide EIC with information and advice that enables the Department to better meet the needs of native women.

### Plans for 1983-84

The Vocational Training Section will no longer operate after the summer of 1983. On-the-job training program will be centralized to the Department's Yukon and N.W.T. Regions. Responsibility for training programs in Northern Quebec will be transferred to the Kativik School Board.

A new multi-year Co-operatives Development Program will support the training of native managers and the implementation of management control systems. Recommendations resulting from a study of Inuit carving production and marketing will be reviewed for possible adoption.

A plan for managing the Beverly and Minuriak caribou herds will be instituted after full consultation with interested groups. A film program on the herd will be carried out successfully in the Keewatin to increase dialogue among hunters, biologists and government managers may be extended to northern Manitoba and Saskatchewan.

To help Inuit market their art in the United States, the Division is developing a travelling exhibition in conjunction with Canadian Arctic Producers. Beginning in 1984, the exhibition is expected to travel to about 15 cities in the eastern United States over a two-year period.

An historical exhibition of photographs of Inuit artists and their work was purchased. The photographs are by the noted photographer, John Reeves, and are being lent to the National Film Board for inclusion in various travelling exhibits beginning in 1983.

An educational audio-visual production featuring major Baker Lake artists is planned. The presentation will be available for loan to marketing agencies and cultural institutions to promote Baker Lake artists. A comprehensive research project is planned to document the Department's role in developing arts and crafts in the North.

### Part III - Canada Labour Code (Labour Standards)

The provisions of Part III of the Canada Labour Code do not apply to any local or private work or business in either Yukon or the Northwest Territories. However, as in the provinces, they do apply to those businesses or commercial activities that usually fall under federal jurisdiction.

During the 1982-83 fiscal year, 50 complaints were investigated under Part III of the Canada Labour Code (Labour Standards), of which 21 were in the Yukon Territory and 29 in the Northwest Territories. As a result of these investigations, \$9 854 was recovered for 12 employees in the Yukon Territory, and \$28 289 for 24 employees in the Northwest Territories. In the same period, 20 routine inspections were carried out in the Northwest Territories, and 18 in Yukon.

### Part IV - Canada Labour Code (Safety of Employees)

The long-term objective in the Territories is to implement a comprehensive employment safety program that covers employees subject to Part IV of the Canada Labour Code. The Code includes employees in the Public Service of Canada who are covered by the Treasury Board Occupational Health and Safety Policy. Under Part IV of the Code, the Department is responsible for ensuring that employers doing business with the federal government maintain safe working conditions for their staffs. In the Federal Public Service, the Department acts as an agent of the Treasury Board by helping to develop and improve safety programs. It also monitors existing programs in accordance with the Board's Occupational Health and Safety policies.

### Summary of Activities - Northwest Territories and Yukon

During the 1982-83 fiscal year, the Department carried out 70 safety visits in the N.W.T. These visits were made in response to complaints, in carrying out inspections, accident investigations and surveys, and in developing the Safety Audit Program.

The Labour Affairs Officer from Whitehorse made three service trips to 14 communities in the Northwest Territories. Four service trips were made to two communities in Yukon.

During June 14-18, 1982, Labour Canada held seminars on safety and accident compensation in Yellowknife and Whitehorse for employees of federal departments, agencies and Crown corporations.

In 1982, Labour Canada concluded new agreements with the Yukon and Northwest Territories whereby they will carry out technical inspections of boilers, pressure vessels and elevators in federal buildings on behalf of the Department. During 1982-83, 143 boilers and pressure vessels and 35 electrical installations were inspected.

### Accident Compensation

To the end of March, 1983, the Department processed 157 claims in the Northwest Territories and 336 in Yukon.

### Plans for 1983-84

For the fiscal year 1983-84, the Department's priorities in the Territories will be to carry out safety inspections and investigate accidents.

# Public Service Commission

## *Review - 1982-83*

### *Indigenous Participation Programs*

In 1982, the Public Service Commission (PSC) reorganized its programs for increasing native participation within the Federal Public Service. It combined the Office of Native Employment and the Northern Careers Program into a new organization called Indigenous Participation Programs. The organization's main responsibilities are to promote native employment and development.

Regional Native employment co-ordinators are available at PSC offices located in Whitehorse and Yellowknife. These co-ordinators counsel native persons about jobs and careers within federal departments and agencies in the North. They also help departments to carry out activities associated with the federal government's policy of recruiting Indians, Métis, Non-Status Indians and Inuit into the Public Service.

Since the Northern Careers Program began, the PSC has administered it on behalf of the Department of Indian Affairs and Northern Development. However, as of April 1, 1982 the Commission assumed all responsibility for funding, operating and administering the Program.

Its focus is on providing native people who live in Yukon and the Northwest Territories with training and career development opportunities. Training opportunities are available for positions such as program managers, personnel and administrative officers and renewable resource officers.

Under the Northern Careers Program, northern native persons are selected and appointed to one of 58 positions specifically identified for training purposes. Participants usually remain in the Program for up to two years. During that time, they learn to do jobs normally found in government operations and to which they could reasonably aspire when their training is finished. The Program is a comprehensive one; it offers its participants formal training, meaningful work assignments, counselling and career planning assistance.



Mr. Lloyd Jones graduated from the Northern Careers Program and obtained a position as wildlife officer after completing a training assignment in Renewable Resources at Thebatcha College.

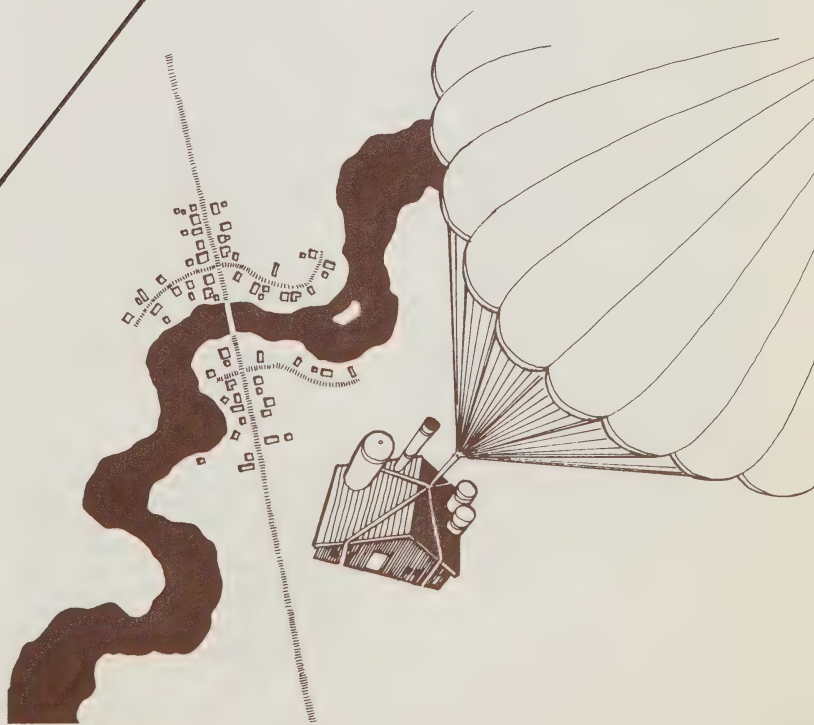
At December 1982, 339 Indians, Inuit and Métis had participated in the Program. Of these, 156 had completed full career plans and had graduated; 54 are still in training; 39 had transferred to positions equal to or higher than the positions they held at entry, and 90 had withdrawn from the Program.

### *Plans for 1983-84*

The Office of Native Employment will continue to ensure that the Increased Participation Policy is implemented in accordance with the objectives of both the Native population and the Public Service of Canada.

The Northern Careers Program is planning to establish an office in the Eastern Arctic. It will provide a service similar to that currently being provided from the Commission's Offices in Yellowknife and Whitehorse.

# Economic Development (Other)



# Department of Fisheries and Oceans

## Economics and Marketing Services

### Review of 1982-83

A study of alternative commercial licensing systems for the Great Slave Lake fishery was completed. The Department surveyed fishermen to obtain their opinions on possible appropriate licensing systems. Data were collected and analysed, a report was prepared for an economic impact study of the recreational fishing lodge industry in the N.W.T. The objective of the study was to determine the industry's contribution to the regional and national economies.

### Plans for 1983-84

The study of licensing systems in Great Slave Lake commercial fisheries will continue, and the Department plans to hold a series of meetings with fishermen's groups to discuss the personal survey interviews. Possible changes to licensing policy for all or part of the fishery may also be discussed.

A pilot program is being developed to establish a system to record the recreational fishing catch for fishing lodges in the more remote parts of the N.W.T. Selected sites will be used to test the feasibility of allowing the lodges to administer their own fishing log books. The Department will use the results of the test program to determine whether it would be desirable to extend this arrangement to the rest of the fishing lodge industry. DFO and the Government of the Northwest Territories plan to review management goals for the Great Bear Lake fishery to assess the adequacy of existing mechanisms for allocating resources.

## Inspection, Fisheries Assistance and Development

### Responsibilities

In the N.W.T., the Department monitors fish handling and processing facilities as well as and commercial fishing and distribution systems to ensure conformity with regulatory requirements. Field and laboratory inspections are carried out to ensure that fishery products are acceptable for market. DFO also provides assistance to

fishermen by offering vessel upgrading subsidies and vessel insurance. The Department is also involved in developing new equipment, products and fishing and handling methods, and it passes the results on to the industry. Finally the Small Craft Harbours group develops and maintains facilities which may be used by commercial fishermen.

### Review 1982-83

#### Inspection

To increase the effectiveness of inspection activities in the Northwest Territories, N.W.T. Government Conservation Officers from selected Arctic locations were officially designated as Primary Product Inspectors. They carried out more than 300 inspections on five registered plants and several unregistered lakeside landing sites to help ensure compliance with regulatory requirements for operations, equipment, and construction. In addition, the inspectors conducted more than 500 microbiological analyses to determine the acceptability of more than 1 134 tonnes (2.5 million pounds) of landed fish.

In addition to carrying out routine contaminants analyses on commercial production, the chemistry laboratory (at the Freshwater Institute) tested fish for mercury contamination from Gage Lake, adjacent to an old mine site. The laboratory also analysed more than 11 000 marine biota samples from Strathcona Sound for the presence of heavy metals.

The Quality Improvement Program, which began with fishing vessel surveys in 1981, saw 294 commercial vessels surveyed in 1982 for compliance with a revised Schedule III of the Fish Inspection Regulations. Upgrading subsidies for 50 per cent of material costs (to \$1 000) were available to assist non-complying vessels.

#### Fishermen's Assistance

Vessel upgrading assistance to cover 25 per cent of the cost was also available through the Fishing Vessel Assistance Program. In the last 10 years, 19 vessels have been built for commercial operators in the Northwest Territories. A comprehensive Fishing Vessel Insurance program currently covers 40 commercial fishing vessels on Great Slave Lake and in the Eastern Arctic.

## Fisheries Development

One of the DFO's automated winter fishing sheds was again available to demonstrate mechanical net-lifting and fish-packing under cover during severely cold weather. The Beaufort Sea Herring Roe project was successful in locating fish stocks, determining where fish spawn under the ice, and netting enough specimens to produce a sample of salted roe.

The Saputit (weir) Harvesting project was operated successfully by fishermen on the Jayco River on Victoria Island after initial trials by departmental personnel in 1980 and 1981.

Potential sites for selective trap net fisheries were identified on the East Arm of Great Slave Lake and net designs used on the Great Lakes in Ontario were modified for use in the trap net application.

## Small Craft Harbours

The Small Craft Harbours Branch maintained a wharf for commercial fishermen on the East Channel at Hay River.

### Plans for 1983-84

In addition to maintaining existing various regulatory, assistance and Small Craft Harbours programs, the Department will be expanding the Quality Improvement Program. The objective is to certify all commercial fishing vessels. The first step will be to survey landing sites to determine the extent to which these sites comply with construction and operation regulations. Tests will continue on the automated winter fishing shed, which will again be demonstrated on Great Slave Lake. The Beaufort Sea Herring Roe fishery will continue with a view to producing enough salted roe to market this product. Selective summer fishing methods will be tested. The Saputit weir fishery project will be repeated on the Jayco River, and a trap net fishery will be carried out in selected sport fishing areas on Great Slave Lake.

# Department of Indian Affairs and Northern Development

## Indian and Inuit Affairs Program

### Headquarters

The Band Training and Advisory Services Directorate (BTAS) worked with the Council for Yukon Indians (CYI) to help develop a Native broadcasting system in the Yukon. The Directorate provided \$133 540 to train radio operators, technicians and programmers to operate the system. The Council expects that the system will begin broadcasting from Whitehorse in September 1983. BTAS, along with the Department of Communications, the Department of Secretary of State and the Northern Affairs Program of the Department of Indian and Northern Affairs helped co-ordinate the efforts to develop a policy for northern broadcasting. These efforts produced a program suitable for the North to be administered by the Native Citizens Directorate of the Department of Secretary of State. The \$40.3 million program will run for four years.

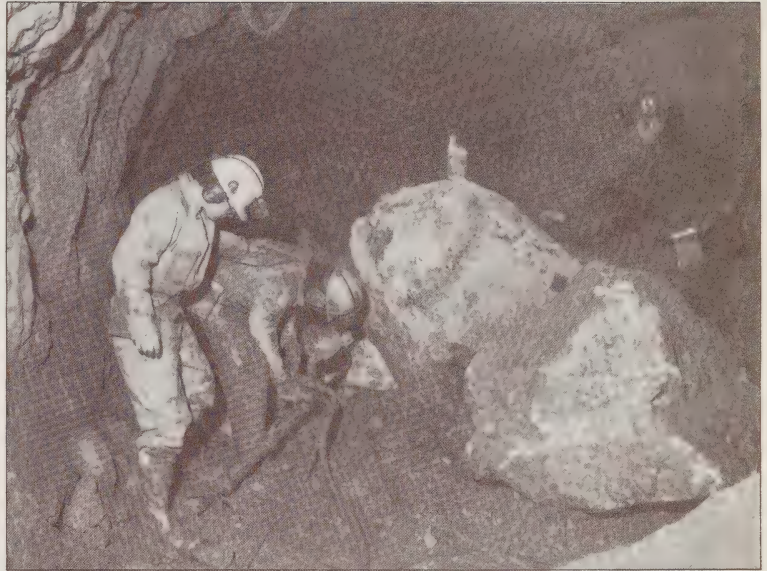
### Plans for 1983-84

and Training will continue to sponsor such programs as CESO (Canadian Executive Services Overseas) and the Indian Management Development Program. These provide assistance in operating the socio-economic development and management programs. The Directorate will continue to encourage special projects such as Distance Education and Training for Trainers.

### Resource, Economic and Employment Development

#### Review 1982-83

The Resource Development Impacts Directorate was established in 1981-82 to respond to the concerns of Indian people about major resource development. In 1982-83, the Directorate provided funds to Indian bands in Yukon, British Columbia and Northwest Territories to enable them to deal more effectively with the effects of major resource development by providing planning and organizing.



A copper mine near Whitehorse. (Photo: Patrick Morrow)

In Yukon, the Directorate provided financial assistance and technical advice to the Ross River Band to deal with the effects of the Yukon Barite Mine and Mill developments and Canada Tungsten's proposed mining in MacMillan Pass. The Band has won various trucking contracts with the Yukon Barite Mine and Mill operation. The Company has also tentatively agreed to provide training programs for Band members. An agreement has been reached with Canada Tungsten to share 50 per cent of the cost of a socio-economic study of the effects of proposed tungsten mining in MacMillan Pass.

In the Northwest Territories, the Directorate provided financial and technical assistance both to the Dene Nation, and to Dene communities in the Mackenzie Delta and along the Mackenzie River. This assistance will help the Dene to deal with the effects of the Beaufort Sea Hydro developments, the Norman Wells pipeline construction, and the proposed Slave River Hydro development.

The Dene Mackenzie Delta communities submitted a written presentation to the Federal Environmental Assessment Review Office expressing their concerns with the Environmental Impact Statement on the project prepared by the industry group.

The Dene Mackenzie River communities have won exclusive contracts to clear bush for the construction of the Norman Wells Pipeline. Studies are being carried out by the FittsSmith Native Band and the Deninoco community council to enable them to participate at Federal hearings on the Slave River Hydro Proposal.

### Plans for 1983-84

The Resource Development Impacts Directorate will provide advice and funding to Indian people whose communities will be affected by resource developments.

## **Resource, Economic and Employment Development Program**

### *Yukon Region*

#### **Review 1982-83**

The Resource, Economic and Employment Development Program helped Indian people to develop and expand native business and to create jobs. The Program provided loans, contributions, and counselling services for these purposes.

In 1982-83, the Program contributed \$191 248 to Bands in the Region. These funds were used for activities as such as running training programs and providing financial help to trappers. The Program also contributed \$56 513 in business assistance to individuals and companies.

Under the Resource Development Impacts Funding Program, the Program allocated \$164 719 to support socio-economic studies of the Liard River Hydro-Electric and MacMillan Pass mining projects.

In 1982-83, a pilot project in Whitehorse helped about 100 Indian adults to find jobs. Workers in most of these jobs received training and were jointly supported by Canada Employment and Immigration Commission (CEIC). As well, about 40 other people received approximately \$97 000 in connection with the employment and training programs offered by the Department.

#### **Plans for 1983-84**

In 1983-84 the Resource Economic and Employment Development Program will assume responsibility within Indian and Inuit Affairs for providing occupational skills training. It will also continue its work in the Loan Improvement Process undertaken by the Department in 1982-83. Both the pilot project and the employment services programs are expected to continue.

### *Northwest Territories Region*

The Economic Development Program provides advice and financial assistance to enable native northerners to communicate with government departments and private organizations involved in economic development in the North.

#### **Review 1982-83**

The Economic Development Section continued to provide financial and business development advice to individuals, associations, Native groups and band development corporations. The Program continued to focus on socio-economic planning at the community level by helping bands to form economic development committees. The Program also continued to provide administrative training to band secretaries and managers.

#### **Plans for 1983-84**

Socio-economic development will remain the primary concern of the Regional Office. Priorities include working more closely with Dene leaders and chiefs in developing programs, training capability, and expertise in managing businesses. The funding and administrative support for band councils will be based upon their own priorities for socio-economic development.

## **Northern Affairs Program**

### **Northern Environment Branch**

#### **Northern Environmental Protection Directorate**

##### **Responsibilities**

The Directorate co-ordinates, develops and recommends policies, strategies, plans and regulations for protecting the environment in Yukon, the N.W.T. and adjacent offshore regions. It manages and applied northern environmental research program and sponsors other applied research to support this work. The Directorate also develops and implements policies for assessing the environmental impact of northern development projects and is responsible for implementing the Federal Environmental Assessment and Review Process within the northern program.

##### *Protection of the Environment through Impact Assessment and Related Functions*

#### **Review 1982-83**

The Directorate reviewed the Beaufort Sea Environmental Impact Statement covering the environmental effects of oil production and transportation by ice-breaking tankers and pipelines. It also analysed environmental issues relating harbour sites on the Beaufort Sea coast. Placer Mining issues were examined and guidelines prepared in co-operation with the Departments of Environment and Fisheries and Oceans. Preliminary evaluation of Slave River Hydro-Development issues began.

The Directorate prepared a draft policy paper on conservation that provided the basis for discussion at a Northern Conservation Policy Workshop held in Whitehorse from February 27 to March 1, 1983.

Advice and assistance were provided to Regional Environmental Review Committees (RERC) along with environmental advice and input to the Infrastructure Division for the North Canal Road and to the Northern Program on the Environmental Regulation of the Norman Wells Pipeline. The Directorate also advised Headquarters and the Regions on caribou and other environmental issues. Staff participated in the T.F.N. (Tungavik Federation of Nunavut) Land Claims negotiations.

# Eldorado Nuclear Limited

# Energy, Mines and Resources

The staff continued to participate in refining the Integrated Route Analysis and advised on environmental issues relevant to choosing a route for proposed ice-breaking tankers. The Directorate provided this advice through its participation in the Arctic Pilot Project Working Group, which includes Danish representatives concerned with the waters between Greenland and Baffin Island. Staff also participated in the Kativik Environmental Advisory Committee for northern Québec. The Directorate was represented at discussions concerning the formation, terms of reference and budget for the Hudson Bay Oil and Gas Advisory Committee.

## Plans for 1983-84

The Directorate will continue its involvement in the Beaufort Sea Hydrocarbon development and will participate in the public review of the Beaufort Sea Environmental Impact Statement. As well, it will continue to assist in developing caribou regulations pertaining to the Keewatin.

In-field monitoring for compliance with environmental terms and conditions imposed on resource developers will be conducted during the 1983-84 period to improve the assessment process and to develop environmental standards. Projects monitored will include the Esso Norman Wells Project and the North Anol Road.

Eldorado Nuclear Limited is a Federal Crown corporation engaged in exploring for uranium and in mining and refining this resource. The Company also explores for other minerals. During 1982, the Company underwent a corporate re-organization. All mining and refining activities are now carried out by Eldorado Resources Limited, and exploration is carried out by Eldor Resources Limited.

Eldor participated in two field exploration programs in the Yukon Territory and one in the Northwest Territories in 1982. It is expected that exploration activities in these areas will decrease in 1983.

## Mineral Policy Sector

### Responsibilities

The Mineral Policy Sector helps to develop federal policies on mineral resources. It deals mainly with non-energy mineral resources and the contribution they make to the economy. Policy advice is based upon intelligence-gathering and data analysis.

### Review of 1982-83

During the year, the Mineral Policy Sector's northern activities involved special study groups that included representatives from the Federal and Territorial Governments and industry. Activities also included working on interdepartmental committees and participation in various conferences. These included the:

- Northern Mineral Advisory Committee;
- Deputy Ministers' Committee on Native Land Claims;
- Senior Committee on Northern Mineral and Energy Resource Assessments;
- Working Committee on Northern Mineral and Energy Resource Assessments;
- Federal-Provincial Mines Ministers Conference; and
- 10th Annual Geoscience Forum, Whitehorse

Special studies or projects initiated by the Sector, or to which the Sector contributed, included:

MRI 82/1 Regional Mineral Report, 1980  
MRI 82/3 Alternative Technologies for Metal Processing Implications for the Yukon

The Sector continued to monitor the reserves and production capability of Canada's nonferrous metal mines. Two documents on the results are publicly available:

MR 191 Canadian Reserves as of January 1, 1981: Copper, Nickel, Lead, Zinc, Molybdenum, Silver and Gold; and,  
MR 192 Canadian Mines: Perspective from 1981: Reserves, Supply Capability, Development, Exploration.

A report on the Perspective from 1982 will be available in early 1983.

The Mineral Policy Sector chairs the Federal-Provincial Mineral Statistical Committee, which includes participation by the Territorial Governments. It compiles and publishes annual mineral statistics, including those on northern mines. In 1982-83, the Sector also published a statistical report entitled *Production of Canada's Leading Minerals*.

Some entries in the National Mineral Inventory card file on northern mineral occurrences and deposits were updated. New cards were added and some were consolidated. A computer index file system called MINSYS is now operational.

MRI 80/7, Canadian Mineral Deposits Not Being Mined in 1980, has been updated and will be republished in 1983.

With the Department of Indian Affairs and Northern Development, the Mineral Policy Sector has been involved in assessing problems in the northern mineral industry created by depressed 1982 metal markets and prices.

#### **Plans for 1983-84**

The Sector will continue to gather data on northern mineral development, and will carry out a commodity study on bentonite and, possibly, one on barite. It will also provide advisory assistance on issues such as northern mineral policy, comprehensive native claims and the withdrawal of northern lands for parks. Along with Indian Affairs and Northern Development, the Mineral Policy Sector will continue to both advise the Department of Employment and Immigration about job-creation projects, and keep the industry abreast of them. Policies being developed by the Territorial Governments and Indian Affairs and Northern Development that affect the non-energy minerals industry will be monitored.



Crew running a temperature log at an exploratory well on northern Ellesmere Island. Deep snow in May 1982 required digging out wellhead. Only the pulley inserted in top of borehole casing is visible. This borehole will be abandoned in 1984.

#### **Canada Centre for Remote Sensing**

##### **Responsibilities**

The Canada Centre for Remote Sensing (CCRS) develops and co-ordinates a national program to produce remotely sensed data and derive information for the management of Canadian natural resources. In recent years, this activity has included a concentrated effort in support of northern resources exploration and extraction.

##### **Review of Activities 1982-83**

CCRS continued development work on remote sensing systems designed to provide information to assist resources development in Arctic waters.

CCRS operates a Convair-580 aircraft, equipped with a synthetic aperture radar (SAR) and microwave scatterometer. The airplane was flown in the Beaufort Sea and Western Arctic in the spring and summer of 1982, and off the Labrador coast in the spring of 1982. The purpose of these flights was to gather information on ice type, ice movements, ice ridging, and ice pack formations in support of development studies for the proposed remote sensing satellite, RADARSAT. These activities were directed not only at determining the technical specifications of the sensors to be carried on the proposed satellite, but also at determining optimum satellite orbit parameters as well as frequency of coverage requirements.

As part of a service provided to other federal government agencies, the digital multispectral scanner mounted in the CCRS Falcon-20 aircraft was used extensively by the department of National Defence to collect infrared terrain signatures under a wide variety of Arctic conditions.

##### **Planned Activities 1983-84**

In the spring and fall of 1983, the Convair 580 aircraft will be used to collect data on icebergs in open water on the Grand Banks and along the Labrador coast. These experiments, which are being carried out in collaboration with several Canadian oil companies, will help in predicting the performance of both the air-borne 3 and 2 satellite-borne radars in detecting icebergs under various sea conditions.

Starting in 1990, the Canadian RADARSAT program, which is in the "Phase A" study stage, will provide regular, complete coverage of the proposed Arctic transportation routes. The microwave sensors on this satellite will provide all-weather, all-year coverage of the Arctic regions, since microwave sensors can operate without sunlight and will penetrate cloud.

# Northern Canada Power Commission

The Northern Canada Power Commission (NCPCC), a Federal Crown Corporation, operates under authority of the Northern Canada Power Commission Act. It is concerned with the planning, construction and management of public utilities, primarily electrical, on a commercial basis. For this purpose, it is empowered to survey utility requirements and to construct utility plants in the Northwest Territories (NWT) and the Yukon Territory (YT).

The Commission is the principal producer of electrical energy in Northern Canada and operates the main transmission networks in the YT and NWT. In addition, it operates community heating, water and sewerage systems in several locations.

It is a requirement of the authorizing Act that operations of the Commission shall be self-sustaining within each rate zone as defined in the Act. Rates charged for utilities supplied must consequently provide sufficient revenue to cover interest on investment, repayment of principal over a period of years corresponding to the estimated economic life of the related asset, operating, maintenance and administrative expenses, and a contingency allowance sufficient to meet unforeseen or emergency expenditures.

## Review of 1982/83

During the 1982/83 fiscal year, the Commission provided retail electric utility service to 49 communities in the NWT and 4 communities in the YT, as well as in Field, British Columbia. The Commission also supplied wholesale electrical energy to the local electrical distributors in Yellowknife, NWT and Whitehorse, Haines Junction, Ross River, Carmacks and Keno City, YT. This service was provided from a total of 7 hydro-electric plants and 55 diesel-electric plants located in the general vicinity of the communities receiving electrical service.

The Commission also supplied retail central heat, water and sewerage utility service in Inuvik, NWT, as well as wholesale central heat utility service to the Government of the Northwest Territories at Frobisher Bay, NWT. In the interest of energy conservation and overall efficiency of operation, the Commission provided waste heat from its diesel generating plants to various customers during the year at Dawson City, YT, Cambridge Bay, Igloolik, Rankin Inlet, Coppermine, Pelly Bay and Lac La Martre, N.W.T.

Economic conditions during 1982/83 fiscal year prompted the shutdown of a number of major industrial consumers within the Territories. This situation caused a major impact on generation and sales during the fiscal period. Although the overall picture shows a reduction in electrical generation and sales, the impact would have been far greater had it not been for the ability to provide more of the remaining electrical demand from a hydro source rather than the more expensive diesel generation.

Total electrical generation during fiscal year 1982/83 was 2 489 663 000 MJ, comprised of 1 782 907 000 MJ by hydro generation and 706 756 000 MJ by diesel-electric generation, a decrease of 504 399 000 MJ (16.8%) over 1981/82. Electrical sales in the Yukon Territory were approximately 919 825 000 MJ, a decrease of 30.0% over the previous fiscal year. Electrical sales in the Northwest Territories totalled approximately 1 293 289 000 MJ, which was a decrease of 5.8% over 1981/82. The non-coincidental peak demand on all operations during the year was 139 263 kW, a decrease of 7.7% over the non-coincidental peak demand of 150 861 kW in 1981/82.

## Plans for 1983/84

Projected significant operating statistics for the 1983/84 fiscal year include the following:

Estimated Electrical Generation	2 088 700 000 MJ
Estimated Electrical Sales	1 836 000 000 MJ
Estimated Central Heat Sales	342 374 × 10 <sup>6</sup> BTU
Estimated Fuel Consumption (diesel generation and central heating system)	66,526,745 Litres
Staff Establishment	348
Total Number of Communities Directly Served by the Commission	54
Total Number of Communities Served Indirectly by the Commission (wholesale supply to local distributors)	6

Major capital projects proposed for the 1983/84 fiscal year include the following:

Location	Project	Expenditure
Yellowknife/Snare	Distribution Extensions Electrical Protection	\$ 46,000 50,000
Fort Smith	Generating Unit Installation	100,000
Whitehorse	Distribution Extensions Security Fencing	40,000 106,000
Inuvik	Plant Electrical Improvements Plant Fire Protection	110,000 215,000
Frobisher Bay	Upgrade Federal Plant	150,000
Taltson	Complete Auto Synchronizer For Ossbergers	65,000
Cambridge Bay	Distribution Extensions Plant Interior Upgrade	25,000 150,000
Norman Wells	Distribution Extensions	70,000
Baker Lake	Distribution Extensions	105,000
Tuktoyaktuk	Distribution Extensions Manufacture & Install 2 Module Units	115,000 1,000,000
Rankin Inlet	Distribution Extensions	48,000
Pond Inlet	Purchase & Install Module Unit	550,000
Holman Island	Install 400kW Genset Plant Improvements	300,000 40,000
Whale Cove	Upgrade Fuel System	65,000
Pelly Bay	Distribution Extensions	79,000
Lac La Martre	Install 250 kW Genset Install 20,000 Gal. Fuel Tank	150,000 40,000
Nahanni Butte	Fuel System & Fuel Line Upgrade	45,000
Faro	Security Fence Construction	46,000

# Regional Industrial Expansion

## Responsibilities

The Prime Minister's announcement of January 12, 1982 resulted in the amalgamation of the Departments of Industry, Trade and Commerce and Regional Economic Expansion. The new organization is known as the Department of Regional Industrial Expansion. It will be responsible for increasing the economic prosperity of Canadians in all regions by:

- stimulating the establishment, expansion, productivity, competitiveness and innovative capability of business enterprises in order to realize economic potential;
- enhancing regional industrial benefits associated with major development projects;
- supporting industrial restructuring and renewal for firms and communities requiring exceptional economic adjustment measures;
- facilitating the identification, development and exploitation of domestic and international market opportunities; and
- fostering an environment that encourages innovation, including research and development, entrepreneurship and economic growth.

## Northwest Territories

### Review 1982-83

Activity under the Special Rural Development Agreement (Special ARDA), signed in 1977 and extended for a further two years to March 31, 1984, indicates a high level of acceptance of the program by native people of the Northwest Territories. The program provides financial and other assistance to create jobs and improve socio-economic conditions, particularly for people of Indian or Inuit ancestry. The program began in 1977 and, to December 31, 1982, 489 applications for funding have been received. Of this number, 305 funding offers have been made, which involve a commitment of approximately \$12.1 million.

The Regional Development Incentives Program (RDIA) provides incentive contributions and loan guarantees to business and industry willing to establish, expand or modernize their manufacturing or processing facilities. It is anticipated that the six accepted offers involving departmental commitments of \$290 000 will provide 40 new jobs in the N.W.T.

### Plans for 1983-84

In December 1982, the Honourable John Munro announced the signing of the Canada-Northwest Territories Economic Development Agreement. This Agreement enabled DITC/DREE to enter into agreements with the Government of the N.W.T. Negotiations have been progressing well between the Department and the Government of the N.W.T. toward the development of a Canada-Northwest Territories Subsidiary Agreement on Domestic Market Development (Small Business and Tourism).

Current activity is also expected to increase under RDIA and Special ARDA Programs. With the amalgamation of DITC/DREE, it is also intended that the full range of ITC programs, as applicable, will be made available to the Northwest Territories from the DITC/DREE office in Yellowknife.

## Yukon

### Review of 1982-83

In 1977, Canada and Yukon signed a General Development Agreement (GDA). This Agreement established a framework for joint federal-territorial co-operation in planning and implementing programs for economic and social development. Within this framework, two subsidiary agreements are providing assistance for Renewable Resource Development and Tourism Development.

The Renewable Resource Development Agreement, which provides for \$6.6 million for programs, was transferred to the Department of Indian Affairs and Northern Development for administrative purposes after the reorganization of DITC/DREE and the realignment of Federal Economic Development programs.

Under the Tourism Development Agreement, which was extended to March 31, 1983, \$6 million, including \$3.6 million from DITC/DREE, was provided to assist the further development of this industry in Yukon. Significant progress has been made with projects to improve downtown Dawson City and incentives have been offered to the private sector to increase accommodation for tourists and to place appropriate facades on buildings in the town's historic zone. In Whitehorse, a ski chalet was completed. It enabled the city to host the 1981 World Cup and North American Championships for cross-country skiing. This \$1.5 million facility is expected to contribute to lengthening the tourist season and will provide accommodation for business conventions. Visitor information centres are also being constructed at Dawson City, Whitehorse and Watson Lake.

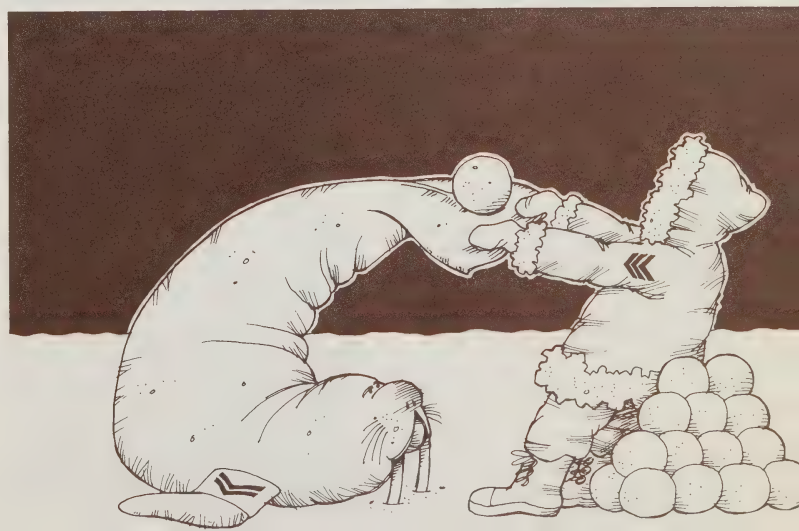
As in the N.W.T., the Special Rural Development Agreement (Special ARDA) has been extended in Yukon until March 31, 1984. From the time the program began in June 1978, until December 31, 1982, 264 applications have been received, resulting in 97 offers of funding to commercial, primary producing, and social adjustment projects. To date, DITC/DREE has committed \$3.4 million to this program, which is expected to create 225 jobs.

Incentive grants are also provided to qualifying enterprises under the Regional Development Incentives Act (RDIA) to establish, expand or modernize manufacturing or processing facilities in Yukon. Since June 1978, a total of \$1.9 million has been offered to five projects to create 70 jobs.

### Plans for 1983-84

The current Tourism Development Agreement expired on March 31, 1983. However, discussions have been underway between the Government of Yukon and DIAND officials with a view to developing a longer term Tourism and Small Business Subsidiary Agreement. In addition, more activity under RDIA and Special ARDA are expected. The amalgamation of DITC/DREE into a new Department of Regional Industrial Expansion means that the full range of ITC programs as applicable, will be offered through the DITC/DREE office in Whitehorse.

# Defence



# Department of National Defence

## Responsibilities

The Department of National Defence is responsible for safeguarding the sovereignty and independence of Canada. In the North, the Department protects Canada against threats and challenges to its territorial integrity (including the integrity of the Canadian territorial sea and airspace) and, in so doing, contributes to collective security arrangements with allies in North America and NATO.

DND also helps civil departments and agencies of government to discharge their responsibilities in the North. Finally, DND contributes significantly to reinforcing Canada's jurisdiction in the North under national and international law.

## Review of Activities 1982-83

### Personnel

Canadian Forces recruiting teams from Vancouver, Edmonton, Winnipeg, Montreal and St. John's conducted briefings on career opportunities in the Canadian Forces and interviewed people in 27 northern communities. As a result, 20 persons were enrolled as recruit trainees. Of these, 12 completed their training and are serving in Canada's Armed Forces.

A native culture course was conducted at CFB Cold Lake to provide military personnel with a better understanding of native life and culture.

The Department of Indian and Northern Affairs paid the travel expenses of five Inuit, Indian, and Metis family members who attended graduation ceremonies at Canadian Forces Recruit School at Cornwallis, N.S.

At the Canadian Forces School of Aerospace and Ordnance Engineering, at Canadian Forces Base Borden, 12 of 13 Inuit candidates graduated from a 7-month aircraft mechanics course this year.

### Maritime Forces

Argus and Aurora aircraft flew approximately 500 hours on Northern Patrols (NORPATs) in the Arctic in fiscal year 1982-83. Conversion from the Argus aircraft to the Aurora accounts for the low total NORPAT hours for the year.

The NORPATs usually operate out of Frobisher Bay and Yellowknife, N.W.T. In addition to fulfilling their primary role of sovereignty surveillance, these patrols also met certain needs of various government agencies. For example, during the ice season, Transport Canada ice observers flew on the patrols and carried out ice reconnaissance. Other tasks included photographic work for the Department of Indian Affairs and Northern Development and the Department of Fisheries and Oceans, investigating off-shore oil exploration and drilling activity on the archipelago, and reporting movements of animal populations. Scientists and observers from other government departments also flew with the patrols. They carried out activities such as investigating seabird and marine populations in the Beaufort Sea.

### Land Forces

During the 1970's, Mobile Command developed an extensive training program aimed at increasing the Command's ability to concentrate forces anywhere in the North during any season and, at the same time, to exercise Canadian sovereignty in the North. The result of this decade of training was the Mobile Command Arctic Training Plan 1980-85. It emphasizes the development of the skills, procedures and equipment needed to permit Mobile Command forces to move tactically throughout the Arctic. The Plan encompasses four interrelated programs: Exercise Sovereign Viking, the Scientific Research Support Program, the Arctic Technology Monitoring Program and the Mobile Command Arctic Operational Training Handbook Program.

Exercise *Sovereign Viking* is conducted in the high Arctic twice each year - under summer and winter conditions. The emphasis is on the lands and seas lying along the north of the Northwest Passage. The exercises last from eight to ten weeks, during which a number of long-range patrols mounted in vehicles are deployed from a support base. For example, the First Battalion, Princess Patricia's Canadian Light Infantry from Calgary took part in Exercise *Sovereign Viking* on Cornwallis Island, North West Territories from 11 February to 18 April 1982. A team from the Defence Research Establishment, Ottawa also conducted trials with various items of personal Arctic clothing and equipment during this exercise. These patrols are supported by helicopters and long-range communication detachments.

### Air Forces

Air Transport Group Hercules aircraft provided weekly service flights in addition to special flights to support Canadian Forces Communications Stations at Inuvik and Alert. Re-supply flights to Canadian Forces Station Alert, known as "Boxtop" operations, were conducted in May, August and November 1982.

During 1982-83, Hercules and Buffalo aircraft flew airlift support for Land Forces Exercises in the high Arctic such as Sovereign Viking. In addition, the 440 Squadron Twin Otter aircraft from Edmonton and Yellowknife were used for communications flights throughout the North.

Twin Huey and Chinook helicopters from 10 Tactical Air Group flew 926 hours of airlift support in the installation of improved communication facilities in the high Arctic.

The Distant Early Warning (DEW) Line, consisting of 4 main sites and 17 auxiliary sites, continues to provide a military presence and air defence warning capability in the Arctic. These installations stretch from Cape Dyer on the East Coast of Baffin Island to Komakuk Beach near the Alaskan Border.

In July 1982 two CP121 Tracker aircraft from 880 Maritime Reconnaissance Squadron in Summerside, PEI spent 16 days flying approximately 200 hours in the North in support of the Mapping and Charting Establishment in Ottawa. Their task was to fly over Baffin Island, Northern Quebec and parts of Keewatin District to photograph man-made structures or other features. The flights covered about 1.5 million km<sup>2</sup> and enabled the Establishment to update 99 maps of the Island.

Air Reserve activities in the North during 1982-83 included 52 flying hours in support of the 440 San detachment at Yellowknife and, significantly, 510 flying hours in support of the high Arctic project to improve communications facilities.

## Military Engineering

During the summer, major construction included completing the communications facilities between Eureka and CFS Alert, building a 10 km road at Eureka, and installing the foundation for the headquarters and personnel services building at CFS Alert.

The Mapping and Charting Establishment provided Energy Mines and Resources (EMR) with men and equipment to conduct the Doppler survey of the Parry Island Chain. The Establishment also revised approximately 124 1:250 000 scale maps of northern Quebec and northern Baffin Island.

In March 1983, two Combat Engineer Regiment personnel with heavy equipment and stores parachuted into the ice-pack 800 km northwest of CFS Alert to assist the Department of Energy Mines and Resources (EMR) in the Canadian Expedition in the Study of Alpha Ridge (CESAR). The Military engineers' task was to prepare a landing strip on the ice to allow CP Hercules aircraft to deliver the EMR personnel and equipment.

## Northern Region Headquarters

Northern Region, a division of the Canadian military regional structure, consists of the land and water areas of the Yukon and North West Territories.

The Region is the agency of the Department of National Defence for any contracts with, and assistance provided to, territorial and federal government departments in the North.

NRHQ continued to provide liaison, technical advice and logistic assistance for northern exercises mounted by other commands. In addition, tasks were identified for long-range northern patrol flights conducted by the *Aurora* aircraft of Maritime Air Group.

The Canadian North continues to attract many visitors. In 1982, NRHQ briefed and played host to individuals and groups, including the Honourable J. Gilles Lamontagne, Minister of National Defence; heads of diplomatic missions;

50 foreign service attachés; members of the National Defence College; and foreign students attending the CF Command and Staff College.

NRHQ supported exercises such as Manitou Jig by providing advice, accommodation, supplies and maintenance. It also transported supplies and personnel with its ski-equipped Twin Otter aircraft.

## Visits to Northern Communities

Among the important contributions to Canadian sovereignty in the North are the numerous visits NRHQ staff make to Arctic settlements. These visits (more than 200 in 1982-83) emphasize the presence of the military in the North.

## Canadian Rangers

Exercises or operations in the Arctic frequently include the Canadian Rangers, who provide invaluable assistance in navigating, training and surviving in the vast regions of Canada's North. Canadian Rangers are Native men who have a special knowledge of the land that cannot be obtained from books or briefings.

NRHQ maintains liaison with all ranger patrols and conducts ranger training, which includes lessons in first aid, drill and communications; using maps and rifles; and familiarization with military equipment, rations and land operations. During 1982, the NRHQ ranger staff conducted exercises in Aklavik, Fort McPherson, Eskimo Point, Coppermine, Cambridge Bay and Churchill.

The cadet movement "North of 60" is the most significant youth movement in the North. It promotes physical fitness, citizenship and leadership training. Throughout the year, cadet corps and squadrons compete for scholarships and recognition in skills such as flying, shooting and drill. The cadet movement also provides an excellent opportunity for young northerners to participate in exchange visits and citizenship tours and meet people their own age throughout Canada.

In 1982, cadets from Northern Region attended summer camps across Canada. Most attended courses at Cadet Camp Whitehorse in the Yukon, the only cadet camp "North of 60°". This national camp offers visits to historical sites and challenging training in subjects such as canoeing, mountaineering and bushcraft.

During 1982, 60 top cadets from all regions of Canada completed the difficult "Trail of 98". The trek involved hiking through the Chilkoot Pass from Skagway, Alaska to Bennett Lake, B.C., and travelling 800 kilometres down the Yukon River by boat to Dawson City. This annual trek offers excellent leadership and wilderness training to senior cadets.

## Plans for 1983-84

### Personnel

Recruiting teams will continue to conduct career briefings in native communities in the Yukon, Northwest Territories, Keewatin, Northern Quebec and the Labrador Coast. Two cross cultural courses are being planned at CFB Borden for 60 persons. In addition, 12 Inuit will receive training in aircraft mechanics at Canadian Forces Base Borden.

### Maritime Forces

In 1983-84, about 500 hours of *Aurora* sovereignty and surveillance patrols are expected to be flown in the Arctic. Maritime Forces will continue to provide assistance to other government agencies whenever possible.

### Land Forces

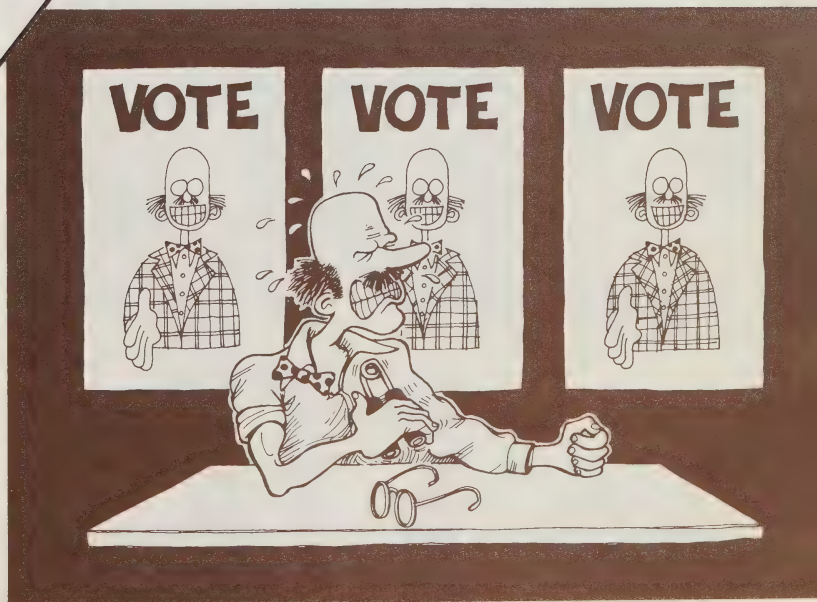
Mobile Command will be conducting two reconnaissance exercises in 1983 to acquaint senior staff with northern communities and their activities.

### Air Forces

Air Force activity in the North is expected to continue at approximately the same level through 1983-84. Hercules aircraft will provide regular service to Alert, Inuvik, Yellowknife and Whitehorse. These aircraft will also be used during the spring, summer and early fall to airlift supplies to Alert and various land forces exercises in the North. Both Hercules and helicopter aircraft will again be used to support mapping and charting activity in the high Arctic.



# Local Government



# Department of Indian Affairs and Northern Development

## Indian and Inuit Affairs Program

### Headquarters

#### *Review of 1982-83*

During the 1982-83 fiscal year, \$132 000 was allocated in the Yukon Territory and \$61 000 in the Northwest Territories for the Band Training Program. The Yukon Region also provided \$100 000 for the social action program to relocate the Kwanlin Dun Village in Whitehorse.

In the Northwest Territories, band training was directed primarily toward developing the skills of band managers. In the Yukon Region, the Program emphasized a special approach to community development and band management that is compatible with the needs of native culture. The training included management workshops, a workshop for band secretaries and financial training.

### Yukon Territory

#### *Responsibilities*

The Yukon Region of the Indian and Inuit Affairs Program carries out administrative functions for approximately 3 300 status Indians from 12 Bands in the Yukon and three in northern British Columbia. The Program assists Indian people to achieve their cultural, social and economic goals and ensures that Canada's constitutional and statutory obligations are fulfilled.

#### *Local Government Program*

#### *Review 1982-83*

The Yukon Region's Local Government Program funded all 15 Bands in the Region, enabling them to administer community services locally. Local Government programs provided core funding, funding for band overhead, fire fighting equipment, water and sanitation facilities, and community planning and recreation programs. The Program also provided capital funding to Band Councils for constructing houses and other buildings and for surveying land suitable for housing.

In 1982-83, the Program worked closely with the Bands and the Canada Mortgage and Housing Corporation (CMHC) to provide housing in native communities. This was the first year that CMHC has participated in Yukon Region housing programs.

In July 1982, the Federal Treasury Board gave approval in principle for the Kwanlin Dun Band to relocate its Village from its present location in a swampy area in the midst of an industrial section of Whitehorse to a more attractive residential location. It is expected that relocation will begin in 1984 and be completed in 1987. The Band plans to redevelop the site of the present village as an industrial park.

#### *Plans for 1983-84*

Bands will continue to control and manage municipal services. In 1983-84 the Program will work to provide more band staff training and to increase band participation in joint DIAND and CMHC housing programs.

### Northwest Territories

#### *Responsibilities*

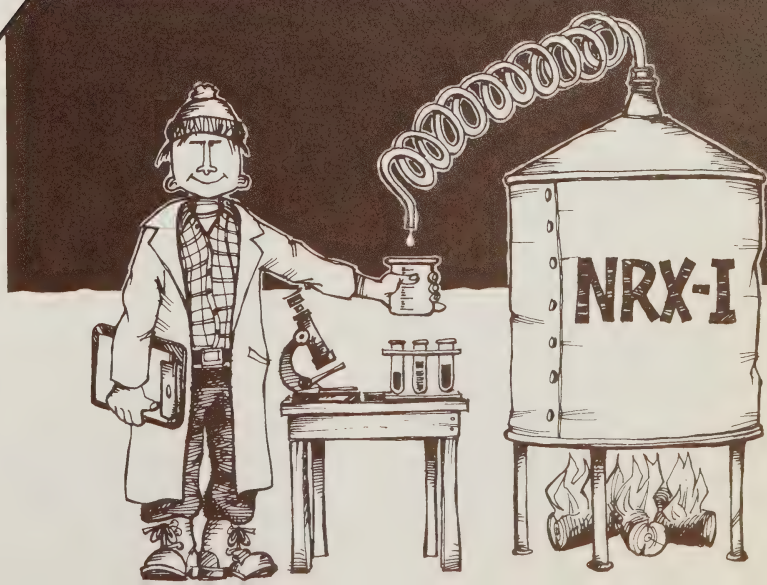
The Regional Office of Indian and Inuit Affairs in Yellowknife consults with 17 Band Councils, Native associations and the Northwest Territories Government to promote the social and economic development of Indian Bands.

Programs involve carrying out the Government's annual treaty obligations to bands and individuals. Core funding is made available to band councils to enable them to develop an administrative capability. These funds are also used to provide administrative and financial management advice to the Band Councils.

The Inuvik Dene Band was established in September 1982, bringing the total number of Bands to 17 in the Northwest Territories.

Band Councils continued to improve their management and administrative capability. All 17 Councils took advantage of the Band Overhead Program to help in business development and in administering job creation programs.

# Research



Four research projects involving 107 existing housing units were started. The objective of these projects, jointly funded with the Northwest Territories Housing Corporation, is to improve existing housing units and to set guidelines for future ones. These projects assess housing designs to determine their costs, structural integrity, energy conservation, tenant suitability, and the availability of the building materials called for

### **Responsibilities**

The Department is responsible for fisheries research and management throughout the Canadian North, drawing its authority from several Acts, including the Fisheries Act. The Department implements oceanographic and hydrographic programs and coordinates ocean policy and programs of the federal government.

### **Fisheries Management**

Arctic fisheries management and research are carried out under four Districts: the Pacific (Yukon); Western (N.W.T.); Gulf (eastern Arctic and north Quebec); and Newfoundland (Labrador Sea and Davis and Hudson Straits). Enforcement and inspection programs and, to a limited extent, management functions, are performed by Fishery Officers in the Territories. Professional assistance for fisheries and fish habitat management is supplied through regional headquarters in Vancouver, Winnipeg, Moncton and St. John's. Departmental headquarters in Ottawa provides input to policy development. The Arctic Biological Station at Ste-Anne-de-Bellevue, Quebec, acts as the research arm of fisheries management in the Gulf region.

### **Fish Habitat Management Branch (Headquarters)**

#### **Responsibilities**

The Branch participates in policy development with respect to fish habitat management and protection in the Arctic. It represents Headquarters on a number of interdepartmental committees concerned with northern development and environmental protection.

#### **Review 1982-83**

Fish Habitat Management Branch staff participated in activities associated with the Beaufort Sea Environmental Assessment Panel. Specifically, they prepared an 'Implications Paper' and a Technical Review of the Environmental Impact Statement. The Branch also contributed one staff member to the Beaufort Sea Office for six months. Staff also assessed the implications for DFO of DIAND's Use Planning policy, particularly as it might apply to facilities along the Beaufort Sea coast.

The Branch developed proposed guidelines for placer mining in Yukon. A compensation plan for users of the fisheries resource affected by hydroelectric development on small streams was prepared in association with Pacific Region. Work began to develop a classification system for Arctic marine habitat.

#### **Plans for 1983-84**

Attention will continue to be given to the Beaufort Sea - Mackenzie Delta area, with participation in public hearings on the Beaufort Sea Project. Efforts will be directed toward designing study proposals for submission to the Environmental Studies Revolving Fund. A public review of the draft placer mining guidelines is planned.

#### **Fisheries Management, Northwest Territories**

##### **Field Services**

Field Services in the Northwest Territories is responsible for enforcing regulations, gathering data on catches (taking harvest inventory) and carrying out management programs locally. Fisheries officers are involved in enforcing the *Fisheries Act* and its regulations. Area biologists are responsible for collecting data on the number of fish caught locally.

#### **Review of 1982-83**

Officers carried out duties related to enforcement, education and collecting data. The Department received valuable assistance in these areas from the Government of the Northwest Territories, especially in enforcing sport fishing regulations.

#### **Plans for 1983-84**

Education and enforcement activities will be directed toward encouraging conservation and reducing waste in whale hunting. Similar efforts will be directed toward minimizing the disruption of fish and marine mammal habitat. Field Services will continue to participate in inter-departmental commitments on resource use and allocation.

#### **Arctic Resource Assessment Section**

##### **Responsibilities**

The Arctic Resource Assessment Section is responsible for carrying out field surveys, assessing fish stocks and habitats and monitoring programs that enable the Department to review environmental impact statements. The section is also responsible for developing and implementing a management strategy for fish and marine mammal resources in the N.W.T.

##### **Review 1982-83**

##### **Fisheries Investigation**

###### **• Great Slave Lake Area**

As part of its continuing investigations into the Great Slave Lake commercial fishery, the Department collected biological samples from the commercial catch and test fisheries. Stock identification and tagging studies were also carried out. A questionnaire was used to survey the domestic fishery. Other surveys included counting the rainbow trout caught by sport fishermen in Polar Lake near Pine Point, assessing the stocking potential of Upper Cabin and Sandy Lakes in the Yellowknife area, and investigating the sports and commercial fishing of the southern part of Contwoyto Lake.

###### **• Cambridge Bay Area**

At Cambridge Bay, the commercial catch of Arctic charr was sampled at the Cambridge Bay processing plant, and assessment of Arctic charr stocks in the general area continued. A fish weir was placed in the Freshwater (Greiner) River to determine the size and composition of the run and a "creel census" (i.e., a survey of the number and kind of fish caught by anglers in the river) was conducted. Test fishing of the Hayes River near Gjoa Haven was also undertaken.

###### **• Keewatin Area**

The Department monitored the commercial char fishery in the Rankin Inlet area. Catches from the Ferguson and Diana rivers were sampled and data on char caught in other rivers along the Keewatin coast were gathered. The fourth year of a five-year program to assess sports fishing for lake trout in the Keewatin was completed. A creel census and experimental tagging and netting for Snowbird Lake were carried out to assess the movement of trout in the lake. Data from these studies will be used to develop a plan for managing sport fishing in the area.

###### **• Baffin Area**

Test fishing on Baffin Island continued and included test netting in the Pangnirtung area. A preliminary investigation began of Clearwater Fjord sports fishing.

###### **• Mackenzie Delta-Beaufort Sea Area**

The new processing plant at Inuvik, operated by the Inuvialuit Development Corporation, was certified under DFO regulations, and commercial fishing for whitefish began. Preliminary results of test fishing for Pacific herring roe in the Liverpool Bay area indicate that a commercial fishery is possible. An investigation into the possibility of commercial fishing for arctic char on the Rat and Big rivers also started this year. In addition, a limnological fisheries study of Noel Lake in the Inuvik area was carried out to examine the potential for sport fishing.

##### **Marine Mammals Investigations**

###### **• Beaufort Sea**

Monitoring of the Beaufort Sea beluga harvest continued, and data on catch effort, hunting loss and the efficiency or hunting techniques were collected. Biological samples were obtained from harvested animals and will be used to describe the population dynamics of the stock.

###### **• Northern Baffin Area**

The Inuit of both Canada and Greenland share and harvest the marine mammal resources of the northern Baffin region. Studies to assess the abundance, habits and intermixing of various populations were carried out to develop a plan for managing these species. Observers monitored the narwhal hunt at Pond Inlet and Arctic Bay and collected data on harvest, catch effort, hunting loss and efficiency of hunting techniques.

- *South East Baffin Area*

More than a dozen communities in the N.W.T. and northern Quebec harvest the beluga stocks in the waters of south-eastern Baffin Island. These stocks show signs of severe over-exploitation. Accordingly, the hunt in the Pangnirtung area was monitored, and biological samples were obtained. Also, preliminary investigations of biochemical techniques for aging and stock identification were carried out with the help of staff from the Arctic Management Research Section.

- *Foxe Basin Area*

An aerial census of narwhal in the Foxe Basin area was conducted and the narwhal hunt in the Repulse Bay, Hall Beach and Igloolik areas was monitored to set harvest quotas for those communities.

The walrus population in Foxe Basin is largely unstudied, and these animals have been subjected to increased hunting in recent years. Studies to assess the status of the walrus population involved monitoring the hunt and obtaining samples.

- *Western Hudson Bay*

Beluga taken in the hunt by residents of Whale Cove, Eskimo Point and Repulse Bay were sampled to provide biological information on the species in the West Hudson Bay portion of the summering range.

#### Resource Impact Investigations

Studies to describe the biology of Mackenzie Delta/Beaufort Sea fish populations continued. These included a program to monitor the migrations of anadromous coregonids in the area and surveys to locate spawning areas in the lower Mackenzie River using radio tagging and sonic detection techniques. In the Tuktoyaktuk area, the second year of a two-year program to describe the physical and chemical characteristics of Tuktoyaktuk Harbour and its importance as a habitat for fish was completed. The second year of a multi-year program to determine the significance as fish habitat of two freshwater systems draining into Tuktoyaktuk

Harbour was also completed. The possible development of a major deep water port in the area around King Point on the Yukon North Slope led to a joint study by Headquarters and the Pacific Region Office to establish base line data on fish resources. Studies were also conducted to gather, update and organize information on fish and marine mammal resources and their possible use. Related surveys were carried out along the southern portion of Victoria Island and the adjacent mainland coast and marine areas east to Pelly Bay. Data from the studies described above and from other sources are being assembled into an inventory of fish and marine mammal resources. Habitat maps for the Beaufort Sea through the Northwest Passage to Baffin Bay are being completed, based in part upon this information.

#### Harvest Studies

In addition to carrying out the above projects, DFO is participating in a jointly-funded harvest study in the Keewatin District and a similar one in the Baffin Region undertaken by the Baffin Region Inuit Association.

#### Plans for 1983-84

##### *Fisheries Investigations*

Assessment studies for lake trout stocks in the inland Keewatin Lakes and for Arctic char stocks on Victoria Island will be completed. A fish weir in the Rat River (Western Arctic) will be used to enumerate and tag the Arctic charr upstream run. The lake whitefish stock identity and migration study in Great Slave Lake will continue. The effort and catch for sport fishing will be monitored in stocked lakes near Hay River and Yellowknife, Kakisa River, and the Inuvik areas. Similar monitoring of commercial fisheries on Great Slave Lake, walleye fisheries in Kakisa and Tathlina lakes and charr fisheries in the Cambridge Bay and Rankin Inlet areas will be carried out. An assessment of Pacific herring stocks in the Tuktoyaktuk area and an equipment trapnet study on Great Slave Lake are expected to continue. In addition, the Test Fishery Program on Baffin Island, being carried out in conjunction with the N.W.T. Wildlife Service, will continue. Pilot creel census studies, expanded to include economic evaluation of sport fisheries, may be undertaken in several locations in the Northwest Territories.

#### Marine Mammal Investigations

The beluga hunt in the Mackenzie Delta will be monitored with an expanded biological sampling program to assess the age, size and maturity of animals hunted. Other beluga studies will include biological sampling and an aerial and land census of the animals in Cumberland Sound and Clearwater Fiord during August, monitoring the hunt here and in the Keewatin communities of Whale Cove and Eskimo Point.

Aerial surveys to estimate number and summer distribution of narwhal will be conducted in the Lancaster Sound area (Eclipse Sound and Admiralty Inlet) and in the Repulse Bay and N. Foxe Basin areas. In addition, the Department will monitor the catch effort for the narwhal hunt, and biological sampling will continue. The second of a five-year study program on walrus in N. Foxe Basin will concentrate on monitoring the hunt in Igloolik and Hall Beach areas and biological sampling of the hunted animals.

#### Resource Impact Investigations

The migrations of anadromous coregonids will be monitored by means of radio tags and echo-location equipment. Investigation work will focus on the Mackenzie Delta and around the Ramparts Rapids on the Mackenzie River. In the Tuktoyaktuk area, the program to describe the physical and chemical characteristics of Tuktoyaktuk Harbour and its importance as fish habitat will be completed. A program to document how bridge construction affects fish and other marine life will be initiated as part of DFO's Norman Wells Pipeline monitoring efforts. Under DIAND's Arctic Land Use Mapping project, contract staff will gather, update and organize information on the fish and marine mammal resources of Wager Bay, Southampton Island and Melville Peninsula.

## Investment Studies

DFO will continue to participate in studying the Keewatin and Baffin region investment, and DFO involvement in a proposed study by the hunters and trappers association is also being considered.

## Arctic Management Research Section

### Responsibilities

This Section conducts research on the Arctic and marine mammal populations of the Canadian Arctic and their habitat requirements. The objective is to provide a scientific basis for managing and protecting these populations.

### Review of 1982-83

Field work on a study of photosynthesis and primary production in Cardigan Strait, Lynx and an aerial reconnaissance of potential field research camp sites on the north coast of Devon Island were completed. Char were sampled from a number of lakes on Cornwallis Island as part of a long-term monitoring program. Samples of various marine mammal tissues from across the Arctic were collected for analyses of genetic characteristics useful in stock identification. Other analyses were carried out to detect metals and organic compounds. Such information may be useful in assessing the potential effects of human activities have on marine mammal populations. Many samples of various freshwater fish species were also examined for genetic characteristics as a possible basis for stock identification and comparison.

### Plans for 1983-84

Studies on population ecology and productivity of selected marine mammals will begin in the 1983 field season. Studies on stock identification and separation using biochemical systematic methods will be continued and intensified as sample collections increase. Similar studies on Arctic freshwater and anadromous fishes will continue.

Work will begin on a long-term study of the marine ecosystem. The studies will include research on primary production, invertebrate production, and the biology of Arctic cod and other marine fish.

## Fish Habitat Research Section

### Responsibilities

This Section conducts research on the mechanisms and processes in ecological cycles and the structure and function of freshwater and estuarine aquatic habitats in the Arctic.

### Review 1982-83

The problem of the source, sinks and cycles of the natural uranium series elements in lakes, streams and the estuary at Saqvaquac are being analysed for natural radionuclides, bomb fallout nuclides, and global lead and mercury fallout.

Freshwater phytoplankton and zooplankton research was conducted on control and nitrogen and phosphorus fertilized lakes at Saqvaquac. Samples of lake zooplankton from the Arctic islands and mainland N.W.T. and Yukon are being used in zoogeographic studies.

Freshwater and estuarine organisms were collected at Saqvaquac, transported to the Freshwater Institute, and maintained alive in fresh and saltwater holding facilities for laboratory research.

### Plans for 1983-84

Planned expeditions to Saqvaquac will allow research to continue on the geochemistry and radiochemistry of the estuary. Detailed sampling of elements of the food chain will improve our estimates of uranium-series nuclide bioconcentration in this Arctic estuary. Proposed studies on selected metals in the estuarine biota may begin. It is proposed to study primary production and plankton biology in the large northern lakes (Great Slave, Great Bear, Athabasca, Reindeer, and Winnipeg) to develop an index of fish productivity.

## Fisheries Management, Yukon Territory

### Responsibilities

DFO is responsible for supervising all river and lake systems in Yukon and northern B.C. The major management concern is with regulating commercial, domestic and sport fishing. Habitat protection concentrates on mining sites and proposed hydro dams. A major responsibility is the management of all freshwater species, including domestic fishing by non-natives. In addition, the District is involved in joint U.S./Canada management activities for transboundary river systems, power line proposals, Indian food fishing, mining, road construction, logging, seismic operations, and Beaufort Sea developments.

### Review 1982-83

Staff became more involved in the joint management of transboundary rivers with their counterparts in Alaska. A draft Pacific Salmon treaty was signed in the late fall. However, the Yukon River was not included in the negotiations, and preliminary talks are to begin early in 1983 to bring this river within the treaty.

For the seventh consecutive year, DFO operated a counting weir on the Klukshu River, site of the most intensive sport and native food fishing in Yukon. The objectives of the 1982 program were: to enumerate the chinook, sockeye and coho returns to the system prior to October 15; to sample a portion of the catch (both sport and food fishing) for baseline bio-statistics; and to obtain a rough estimate of the harvest.

In June, 117 000 rainbow trout fry purchased from Sun Valley Trout Farms were released into twenty pothole lakes in an area extending from near Watson Lake to north of Elsa. Preliminary results were very encouraging. In a follow-up sampling program to determine growth rates and relative abundance, rainbow trout weighing more than 0.5 kg have been caught.

A program that started in 1981 to determine the morphoedaphic index for 52 lakes throughout the Territory was continued in 1982 as part of the Yukon River Basin Study. An additional 17 lakes were sampled for mean depth and total dissolved solids (TDS). Ten of these lakes were also examined for fish species.

To date, the results of the lake productivity program indicate that fish production in Yukon lakes is generally low. Extremely slow growth rates have been determined for lake trout and severe size overlap occurs among the different age classes. This indicates that a low-yield policy should be instituted for lake trout in order to perpetuate the good fishing for this species in Yukon's relatively under-exploited lakes.

The creel census of fly-in lodge district fishermen continued in 1982. The harvest of lake trout from Wolf Lake approached 20 per cent of the allowable catch for that species, whereas in Too-bally Lake the harvest amounted to close to 40 per cent.

Under the Yukon River Basin Study, limnological investigations were conducted on 15 lakes. The studies covered their physio-chemical parameters and the relative productivity of invertebrate trophic levels. Preliminary results suggested that the lakes general appear to be fairly productive in terms of planktonic invertebrates.

During the year, a program to tag chinook and chum salmon was conducted in the Yukon River to estimate population, fishing levels, and migration rates. Two fishwheels and small mesh gillnets were used, and 265 chinook and 1 082 chum salmon were caught, sampled, spaghetti tagged, and released in an area just inside the U.S. Canada border, about 200 km downstream from Dawson.

In conjunction with the spaghetti tagging program, one of the largest radio tagging experiments ever undertaken was initiated with Yukon River chum salmon in 1982. As a joint program with the Yukon River Basin Study, this two-year study will examine such aspects as: migratory behaviour, residence time in the commercial fishery, spawning distribution, and stock separation. Daily tracking was accomplished using Cessna 185 aircraft equipped with 2 independent receivers and antenna systems. Some of the tags were recovered by ground crews operating from boats or on foot. The greatest tracking distance was 800 km over a period of 34 days.

A poor showing of chinook spawners at Whitehorse in 1982 was also reflected in very poor counts from other tributaries.



DFO hydrographers set up a laser distance-measuring device to survey an Arctic inlet.

A high Japanese highseas catch in 1980 and the comparatively high Alaskan catch in 1982 are thought to have greatly contributed to the low numbers of spawners returning to Canada in 1982.

The proposed new guidelines for the placer industry were a major area of activity during 1982. A classification system for streams was developed, based on habitat sensitivity. The guidelines set conditions of operations in accordance with a rationale that considers non-renewable resources.

#### **Plans for 1983-84**

Special emphasis will be placed on finalizing a policy for fly-in sport fishing operations and developing an updated policy covering the management of lake stocks. The Yukon River Tagging Program will continue with spaghetti tagging chinook and chum, along with a radio tagging program for chinooks.

A creel census program combined with species composition work will be carried out on three lakes to determine actual catch in comparison to proposed quotas. Further studies are proposed on placer mining activities to determine the effects on fish and fish habitat. Staff will also continue to be involved in developing co-operative arrangements between Canada and the U.S.A. for the management of transboundary fish.

## **Fisheries Management, Gulf Region**

*Arctic Biological Station, Ste-Anne-de-Bellevue, Que.*

### **Responsibilities**

The Region is responsible for carrying out research in the Eastern Arctic and northern Quebec to learn more about the ecological relationships, behaviour, and population dynamics of marine and anadromous fish and marine mammals. The objective is to provide sound advice on possible yields of exploited and potentially exploitable species. Research is also carried out into the biological processes of marine and estuarine ecosystems, with a view to advising on the potential effects of the development of oil, gas and mineral resources, and hydroelectric power.

### **Review 1982-83**

A study of the distribution and underwater vocalizations of bearded seals occupying the fast ice of northern Amundsen Gulf and southern Prince of Wales Strait was carried out in the period mid-March to mid-June. This study will provide the information needed to predict how ship traffic will affect the seals in this least known part of the proposed tanker route through the Northwest Passage.

A behavioural study of ringed seals started at Dundas Harbour, southeastern Devon Island in co-operation with the Canadian Wildlife Service. Captured animals were fitted with radio telemetry devices and their movements were monitored after they had been released.

Further studies were carried out on the white whales in the high Arctic, including a survey of the number, distribution, and behaviour of the animals at the floe edge in Barrow Strait.

The Fisheries Ecology (biological oceanography) Program continued its coastal ecology study at the head of Frobisher Bay, making full use of the Ikaluit Research Laboratory to process and analyse samples. Projects included studies of the under-ice biota, detrital fall out, the production of phytoplankton and seaweeds, the dynamics of zooplankton, and the biochemistry and energetics of carnivorous macrozooplankton, several species of which are eaten directly by top level predators such as sea birds and seals.

Further studies continued on the effects of petroleum and petroleum-dispersant mixtures on bacteria in conjunction with the Baffin Island Oil Spill (BIOS) project at Cape Hatt, northern Baffin Island.

A brief reconnaissance of the Nastapoka River was carried out to determine the feasibility of conducting behavioural studies and aerial surveys of white whales in this area of eastern Hudson Bay. Regional staff contacted personnel of the Makivik Corporation, who will contribute substantially to future DFO projects, especially in helping to develop a working relationship with Inuit hunters and community leaders.

#### **Plans for 1983-84**

A behavioural study of ringed seals will begin in Amundsen Gulf. Remote recording instruments will be used to determine their movements, activity and microclimate in the birth lairs. Behavioural studies on white whales will be continued at the floe edge in Lancaster Sound and Cunningham Inlet. These studies may be extended to include Creswell Bay in southern Somerset Island.

The distribution and behaviour of bowhead whales in western Hudson Bay, northern Foxe Basin and northeastern Baffin Island will be studied. Aerial surveys will be carried out to count whales and to locate sites from which censuses and behavioural observations can be made. The coastal ecology program at the head of Frobisher Bay will be continued using the resources of the Ikaluit Research Laboratory.

Northern Quebec studies will begin on the distribution, abundance and behaviour of white whales in eastern Hudson Bay. The studies will entail establishing an observation camp at the Nastapoka river, sampling the Inuit catch, and documenting the movement of whales. Other projects include planning for a future fisheries ecology program in Northern Quebec and a study of the Atlantic salmon and arctic char in the area.

#### **Resource Research Branch (Headquarters)**

##### **Responsibilities**

The Branch develops national policies, strategies and procedures for managing Canada's Arctic and inland fisheries and co-ordinates related research to promote a continuing fisheries resource for the benefit of the Canadian people as a whole and the Native people in particular.

##### **Review 1982-83**

Resource Research Branch staff participated in activities concerned with the Beaufort Sea Environmental Assessment Panel, DIAND's Land Use Planning and Conservation Policy and the Arctic Pilot Project. They also maintained interest in the development of the Energy Research and Development funding, Transport Research and Development and the Economic Development Agreement with the N.W.T. Activities carried out during 1982-83 included the following:

- The Branch represented the Department at the Convention on International Trade in Endangered Species (CITES) and chaired the Committee on the Status of Endangered Wildlife in Canada (COSEWIC).

- The policy on the live capture of killer whales was resolved by the Committee on Whales and Whaling (COWW), and a task force was initiated to review departmental cetacean policy in terms of new regulations.

- The annual cetacean report was compiled.

- The Committee on Seals and Sealing (COSS) dealt with several problems related to northern seals.

- Input was provided to the Parks Canada's Marine Parks draft policy.

- The Branch participated with Habitat Management in the pre-implementation phase of the Northern Oil and Gas Action Plan (NOGAP) and continued to be involved in developing departmental initiatives to deal with marine environmental issues.

- Beluga studies in northern Quebec and the St. Lawrence River were begun.

- Branch staff served as the scientific authority on the World Wildlife Fund (Canada) Whales Beneath the Ice Project, a major initiative to study whales in the Canadian Arctic.

#### **Plans for 1983-84**

Plans for 1983-84 include co-ordinating Arctic fisheries and habitat research programs throughout the Arctic and carrying out research to be used in developing a departmental role in conserving Arctic resources and strategies for doing so. The Branch will continue to provide input related to developing Arctic marine parks and DIAND's land use planning and conservation policies. In addition, the Branch will remain involved in all aspects of research and other issues in the North (such as the Arctic Pilot Project vessel traffic studies and the Beaufort Sea Environmental Impact Study) that relate directly to the fisheries resource.

#### **Fisheries Research, Newfoundland Region**

##### **Responsibilities**

Fisheries research responsibilities include the planning and implementation of research cruises to Eastern Arctic waters, with particular interest in potential commercial harvests off eastern Baffin Island and Davis Strait on behalf of Newfoundland-based fishermen.

##### **Review 1982-83**

Primary research was conducted on the feasibility of commercial shrimp and halibut fisheries in waters of Davis Strait, Hudson Strait and the Labrador Sea.

To a large extent, research in the Eastern Arctic constitutes a northward extension of projects originating along the Newfoundland and Labrador Coasts, and may be summarized as follows:

- Investigations of the West Greenland salmon fishery that began in 1968, have been concentrated in the area 60°N-70°N

- The shrimp research program is mainly involved in assessing the stocks of Labrador, including Davis Strait, and monitoring the shrimp stocks of West Greenland through the Observer Program. Commercial and exploratory fishing in eastern Hudson Strait and Ungava Bay have demonstrated a potential for a pink striped shrimp fishery.

# Department of Indian Affairs and Northern Development

- Greenland halibut stocks range from Smith Sound in Northern Baffin Bay south to the Grand Bank, along with substantial stocks in the Gulf of St. Lawrence. Recent findings indicate that the Baffin Island - West Greenland stock and the Labrador-eastern Newfoundland stock are a single interbreeding unit.

- Harp and hooded seals are highly migratory species that summer either in Davis Strait, or further north. Studies are underway to determine the relationship of the Davis Strait and Newfoundland-Labrador populations of hooded seals. Research is also being done on hooded seals in Denmark Strait, an important moulting area.

- Research has begun into Arctic cod populations and their distribution. Large catches of this species began in 1974, but have been declining in recent years.

## Plans for 1983-84

Shrimp and halibut research will continue, as will investigations into the role of Arctic cod as a forage species. Research will begin on the relationship of harp and hooded seal populations in Davis Strait to the Newfoundland-Labrador populations, and the summer ecology of ringed seals at Lake Melville, Labrador will be studied.

## Northern Environment Branch

### Northern Environmental Protection Directorate

#### *Protection of the Environment through Applied Research and Related Functions*

#### **Review 1982-83**

Management of most of the applied research supported by the Directorate remained with the Arctic Land Use Research program. Work on nutrient loading and its implications for recreational and other development of the northern lake basins was completed at Schefferville, Québec. The data are being analysed, and the final report is being written.

Three uranium-related studies are progressing. The survey and data analyses of uranium mineralization areas in the Keewatin were continued this year. Pre-mining background data are being collected for radionuclides occurring naturally in the vegetation, soils and sediments both adjacent to, and remote from, uranium mineralization. A complementary study to establish the pattern of uranium and other associated radioisotopes in lichen heath in the Eastern Keewatin was started. Permanent transects were established for long-term monitoring, and samples will be stored for later reference. Finally, hydrologic and thermal data were gathered from three sites for use in a predictive hydro-geologic model to determine the effects of uranium mine tailings on a permafrost environment. Analysis of these data has already prompted recommendations on managing these tailings.

The Directorate funded two inter-departmental Beaufort Sea studies. One was designed to evaluate sediments and sedimentary processes, the other to integrate industry and government research on the origin, regime and distribution of sub-sea permafrost. Both studies are critical to assessing offshore hydrocarbon exploration and development activities. Financial support was also provided for investigating the impact of ice-breaking ships on whales in Lancaster Sound, and for a native wildlife harvest study in the Keewatin.

An attempt was made to establish historical water quality parameters through an analytical procedure for determining accumulation of polluting elements in fish scales and otoliths. The project was discontinued after preliminary results suggested that extensive basic research would be required before the technique could yield practical benefits.

Compilation and publication of the series of Ecological Bibliographies on the Arctic Islands Archipelago continued.

The Directorate continued to participate in the interdepartmental Baffin Island Oil Spill (BIOS) project. It sat on the BIOS Management and Technical Committees, provided financial support and co-ordinated the tank studies on the behavioural effects of oil and dispersants on selected invertebrates. Interim reports and a documentary film on the field work were distributed.

Similarly, participation continued in the Arctic Marine Oil Spill Program (AMOP) Management Committee and the Offshore Labrador Biological Studies (OLABS) Management Committee and in the Eastern Offshore Marine Environmental Studies (EAMES) through membership on the Management Committee and the Advisory Board. The Directorate supervised the production of several reports integrating EAMES studies in the northern Baffin Bay and Lancaster Sound region. These were some of nine research reports published during the year covering a wide range of subjects such as ice conditions in Lancaster Sound and the disposal of drilling fluid.

## Plans for 1983-84

The study on nutrient loading and the ability of northern lakes to sustain various kinds of development is expected to be finished, while the three uranium mining-related studies, the Beaufort Sea sediment dynamics study, and the whale-noise study will be continued. The BIOS project will continue with studies of the dynamics of uptake and release of hydrocarbons in selected invertebrates. Results will be correlated with behavioural effects already studied. New activities include investigating the toxicity of mine waste chemicals, mapping of standing stocks of phytoplankton in the Western Arctic, a placer mining study and a study to review and evaluate recent computer models that simulate marine oil spills.

The Directorate has begun a major program to utilize the principles of adaptive environmental monitoring to design, implement and manage a comprehensive environmental monitoring program in the Beaufort Sea.

A workshop is planned in Yellowknife to disseminate results of a series of oil spill studies and to evaluate the adequacy of current knowledge.

Two reports on environmental guidelines – one covering mineral exploration and extraction activities, the other recommending procedures for operating pits and quarries – are scheduled for distribution by mid-year.

The Ecological Bibliographies Series will be continued and publication and editing of the EAMES Integrated Environmental reports will be completed.

## **Northern Land Use Planning Directorate**

### *Northern Land Use Planning Policy*

#### **Responsibilities**

The Land Use Planning Branch, Ottawa, provides technical and professional assistance to the regional planning offices of the Department. It co-ordinates the involvement of other federal agencies in land use planning in the North and, as required, provides advice to the Minister and the Northern Land Use Policy Committee.

#### **Review 1982-83**

In July 1981, the Minister, DIAND, announced that Cabinet had approved a new policy for Northern Land Use Planning. This policy called for the establishment of a planning system in the North, under DIAND leadership. Various federal departments, territorial governments, native organizations and others will participate in developing the system. The planning system centres on the creation of Northern Land Use Planning Commissions in each Territory. The Commissions will be responsible for developing comprehensive land use plans, beginning with

priority areas such as the Beaufort. The policy's objective is to create a systematic, open process for planning and co-ordinating the use of northern land and resources while avoiding or resolving conflicts.

Treasury Board Program approval has been received, and work is underway to develop the necessary administrative mechanisms. The Department is soliciting input from all federal and Territorial Government departments with interests in land use planning in the North, and from industry, native organizations and various interest groups, to determine priority areas for planning.

#### **Plans for 1983-84**

The Northern Land Use Planning Program is expected to be fully implemented for 1982-83 with Land Use Planning Commissions established in each Territory. Initial planning will begin in priority areas, including the MacMillan Pass/Howards Pass Region, the Beaufort/MacKenzie Delta, the Mackenzie Valley and Lancaster Sound.

### *Lancaster Sound Regional Study*

#### **Responsibilities**

The Lancaster Sound Regional Study evolved from the 1978 Public Hearings to examine an application by Northern Petroleum Limited for permission to drill an exploratory well in Lancaster Sound. The Federal Environmental Assessment and Review Process Panel, convened to conduct the hearings, concluded that a meaningful assessment of the Environmental and Socio-Economic impacts of exploratory drilling in Lancaster Sound could not be made in isolation from the broader issues that affect all uses of the area. The Panel recommended that the Department of Indian Affairs and Northern Development should undertake a comprehensive review of the complex resource use problems of the Lancaster Sound Region.

Accordingly, DIAND set up the Lancaster Sound Regional Study to initiate comprehensive planning for the future of the Region. A Steering Committee and Working Group drawn from five federal departments and the Government of the N.W.T. were established. The Working Group assembled a data base that summarized all of the physical, environmental and socio-economic information available. It then synthesized this information

and analysed the issues bearing on regional planning. A draft green paper was produced, which was released by the Minister, DIAND, in February 1981.

#### **Review 1982-83**

A thorough public review of the draft Green Paper carried out in 1981 permitted all interested sectors of the public to respond to the questions and issues raised in the document. The report, entitled *People, Resources and the Environment*, by the Chairman of the public review phase, Professor Peter Jacobs was published in April 1982.

The final version of the Green Paper, released by the Minister in 1982 discusses the effects of national policies and current initiatives on the future of the region. Specifically, the paper covered the processes for negotiating land claims, a series of options for future uses of the Region's resources, and various strategies for beginning a regional planning process for Lancaster Sound that would be in harmony with the Department's land use planning policy.

The public will have a chance to respond to the paper between January and March 1983. (All Lancaster Sound publications are available in Inuktitut, as well as English and French.) A round of community meetings will be held in Arctic Bay, Grise Fiord, Pond Inlet and Resolute. A workshop will be held in Pond Inlet.

This review will set the stage for carrying out land use planning for the Region within the framework of the Northern Land Use Planning Policy. It will allow the Directorate to take national, regional and local interests into account when developing a regional land use plan. Finally, the review will provide a forum for discussing the roles local residents and regional organizations can play in Northern Land Use Planning.

#### **Plans for 1983-84**

The report on the public review is expected by the end of June 1983. It is hoped that a Planning Commission for Lancaster Sound can then be formed and start work by late 1983.

## Forest Resources Division

### *Forest Fire Management Program*

#### **Responsibilities**

Forest fire management is a key element in the administration and control of northern renewable resources. The Program provides protection to communities, timber, power transmission and communication networks, recreation areas, watersheds, erosion-prone sites, and community-oriented wildlife areas.

#### **Review 1982-83**

This year, independent consultants evaluated the N.W.T. Fire Management Program Committee and community fire-fighting crews. Both received a high rating.

Good progress was made in developing forest fire protection regulations applicable to federal Crown land in Yukon and Northwest Territories. Another major administrative project was the complete revision of the Fire Management Policy Manual to conform with policy revisions recommended by the Fire Review Panel appointed by the Minister in 1980.

The Division also increased its fire detection capability in the Northwest Territories. It built three fire towers and installed three electronic lightning detectors. As well, the Division evaluated the ability of an automatic weather station to supply data for calculating the daily "fire weather index" rating. The station appears to be quite suitable and others will be installed in various locations over the next few years, as resources permit.

This year, the Department was included on an interprovincial fire control task force. One of the task force's recommendations was to establish an air tanker fleet to increase national fire bombing capability. If the co-operative supply agreement is successful and accepted by both the provincial and federal governments, DIAND will have access to a number of CL 215 water bombers for use in Yukon and the Northwest Territories.

The severe drought experienced in the south Mackenzie area for the past three years, appears to have ended. However, Yukon is experiencing drought problems this year, and fire control is a problem there, with 80 per cent more fires fought than in 1981. One fire threatened

Watson Lake, forcing officials to request aid from Alaska. More than 130 experienced and well-equipped fire fighters responded immediately. That fire cost \$1.4 million and burned 8 000 hectares of forest land. In 1982, 400 fires were fought in the North, compared to 351 for the previous year. A total of 566 700 hectares was burned in 1982, compared to 1 020 091 hectares in 1981. Almost \$22.8 million was spent on fighting fires in 1982. The figure for 1981 was \$19.8 million.

#### **Plans for 1983-84**

During the coming year, the Forest Resources Division plans to introduce the community crew concept in Yukon and to implement a "forest fire fuel appraisal system"<sup>1</sup>. The system was developed last year with the assistance of the Pacific Forest Research Centre of Environment Canada. The fire detection system will continue to be upgraded with the addition of more fire towers in the Northwest Territories and the installation of a number of electronic lightning detectors in Yukon. Other plans include developing a system in Yukon and N.W.T. for rating the severity of fires and ending the CL 215 Co-operative Air Tanker Supply Agreement.

### *Forest Management*

#### **Responsibilities**

This program covers the forest resources of Yukon and the Northwest Territories. Its primary objectives are to maintain a continuous supply of wood for the economy of the North and to create jobs for northern residents.

#### **Review 1982-83**

During the year, the Department completed an evaluation of the Forest Resource Management Program. The evaluation included assessing the extent to which the forests are (and will be) able to meet local and territorial demands for forest products while continuing to provide opportunities for local employment and income. The evaluators concluded that DIAND had not met fully its responsibilities and recommended improvements in the applicable legislation.

A second major report received during the year was a forest policy proposal on a new and expanded forest policy for the North. The consultant

recommended a number of innovative approaches to problems which are now being analysed before developing a departmental position.

The detailed forest inventory survey of the Fort Liard Forest Management Unit has been completed and a start has been made on a similar project in the Trout Forest Management Unit. As well the Canadian Forestry Service of Environment Canada completed a reconnaissance survey of the N.W.T. Plans were developed for a similar project in Yukon to be done in-house.

Other developments include: the completion of the revision to the Territorial Timber Regulations; good progress on the development and documentation of a forest inventory system; and a start on the development of a 10-year forest inventory program.

Co-operation with the Government of the Northwest Territories included supplying a number of reports on the timber available around settlements and an estimate of the amount of timber around Fort Providence. The Department emphasized continued expansion of the wood gasification project in that hamlet.

#### **Plans for 1983-84**

During the coming year, the Department plans to finalize a departmental position on a forest policy. It will approach Cabinet with a view to legislating the policy changes. In the interim, existing Forest Management Directives and policy guidelines will be revised in accordance with the new Territorial Timber Regulations.

In forest inventory, work will be done on the reconnaissance survey for the Yukon Territory. The detailed survey of the Trout Forest Management Unit and documentation of the forest inventory system will both be completed, and approval for the 10-year forest inventory program will be requested from Cabinet.

<sup>1</sup> An estimation of the amount of combustible material in a given forested area.

## Water Resources Division

### *Responsibilities*

The Division is responsible for the protection and management of the inland waters of Yukon and the N.W.T. and Arctic marine waters adjacent to the mainland and islands of the Canadian Arctic. It controls the use of land and waters for hydro power developments on federal lands south of 60°. These responsibilities are carried out under the Northern Inland Waters Act, the Arctic Waters Pollution Prevention Act (for non-shipping activities) and the Dominion Water Power Act.

### *Review 1982-83*

The three-year Mackenzie River Basin Study was completed and the Study Report recommendation on trans-boundary water agreements was acted upon. Major field studies were carried out in support of the Yukon River Basin Study, which is scheduled to be finished by December 1983.

The Division received Cabinet Approval to begin drafting amendments to the Northern Inland Waters Act. Work began on this project late in the fiscal year. Proposed amendments to the Arctic Waters Pollution Prevention Act are almost complete and should go to Cabinet for consideration early next year.

In inland waters, monitoring and enforcement of water licences and authorizations continued at a high level. In Yukon, a new comprehensive set of Placer Mining Guidelines was developed and, in the N.W.T., water licences were issued for the Norman Wells oilfield expansion and associated pipeline to Zama, Alberta.

In the offshore area, environmental regulation and monitoring of all drilling activities were carried out. Esso received approval for drilling and creating one artificial island; approval was given to Dome to operate three drillships and construct one artificial island; to Gulf for one drillship; to Panarctic for three ice islands and to Canterra for one drillship.

### *Plans for 1983-84*

The draft Bill for amendments to the Northern Inland Waters Act will be completed. It will complement a draft Northern Water Management policy for inland waters.

Proposed amendments to the Arctic Waters Pollution Prevention Act are expected to go to Cabinet for consideration. Also, the Division proposes to draft a water management policy for Arctic waters.

More work will be carried out on implementing the recommendations of the Mackenzie River Basin Study. Provincial-Territorial trans-boundary water agreements on Mackenzie Basin streams will be initiated with all jurisdictions.

The Division will continue to participate in the Yukon River Basin Study and the negotiation of a Flood Damage Reduction Agreement with Yukon. Finally, it will participate in up-dating and finalizing the Government Arctic Seas Contingency Plan.

## Land Management Division

### *Responsibilities*

The Division administers surface land rights and environmental regulations for 3.9 million km<sup>2</sup> of northern Canada lands in Yukon and N.W.T. and another 1 million km<sup>2</sup> of submerged lands in Canada's northern offshore regions.

### *Review 1982-83*

Throughout 1982, the Division was involved in developing new regulations for northern land management. The Territorial Lands and Public Lands Regulations were redrafted to comply with the Government's new policy on administered prices, which imposed the "Six and Five" guidelines on price increase until June 1984. Final approval for these regulations is now being sought. New Territorial Lands and Public Lands Pits and Quarries Regulations were developed these replace the outdated Territorial Quarrying Regulations and incorporate modern methods of allocation, conservation and environmental protection for granular and aggregate materials. These Regulations were also extended to offshore sand and gravel under the responsibility of the Minister. In March 1983, a final draft will be produced incorporating valid concerns of native groups and industry.

The Division continued to represent the Northern Program in Comprehensive Native Claims on matters connected with lands and resource management. Considerable input was provided to the Yukon, Dene, Committee of Original Peoples Entitlement (COPE) and Inuit Tapirisat of Canada Claims negotiations.

By late 1982, efforts were being made to develop manuals for the Renewable Resources Branch to provide a more efficient and systematic approach to resource management. The Division's primary concern in developing manuals will be to promote greater consistency in policy and procedural directives.

Approximately 285 applications were received for land use permits for exploration and development activities in Yukon and the northwest Territories. The potential environmental impact was studied in each case. Operating conditions were prepared after consultation with other federal departments, the Territorial Governments and communities that might be affected. Permits were issued for such operations as road construction, mineral exploration, petroleum exploration, campsites, quarrying and land clearing. In 1982, approximately 110 quarrying permits authorized the removal of 1 134 550 and 1 660 000 m<sup>3</sup> of sand and gravel in the Northwest Territories and Yukon respectively. In addition, large quantities of material were used for the construction of islands in the Beaufort Sea.

The report of the Interdepartmental Working Group on International Biological Program (IBP) Ecological Sites in Polar Bear Pass was released for comment on September 18, 1981. The Minister approved final recommendations on Polar Bear Pass in the Spring of 1982. The IBP (Polar Bear Pass) lands have been withdrawn from further disposition and transferred to the Canadian Wildlife Service of Environment Canada a National Wildlife Area.

Grants of easement were obtained for the Alaska Highway Natural Gas Pipeline and the Norman Wells Pipeline, and the Easement Agreements for both these lines were finalized in 1982-83.

The Land Management Division provided environmental inputs to the Exploration Agreements negotiated by COGLA with the various oil and gas companies operating in the North.

A draft discussion paper entitled "A Comprehensive Conservation Policy and Strategy for the Northwest Territories and Yukon" formed the basis for discussions at a workshop held in Whitehorse in March 1983. The recommendations of the participants from government, industry, native organizations, conservation groups and the general public provided a Draft Action Plan for Northern Conservation for review by the Minister. Future plans for developing a conservation policy and strategy are contingent upon the Minister's approval.

The Land Management Division conducted studies to assess the granular requirements of gravel used for exploration, development and production operations in the Beaufort Sea. These studies will determine areas requiring further research (in co-operation with industry) to locate enough gravel for the Beaufort Sea operators and allow the Department to better manage this somewhat scarce resource.

#### **Plan for 1983-84**

The Division plans to carry out an in-house review of its administrative policies and procedures to identify ways to administer northern lands more efficiently and consistently. Continued effort will be given to developing pits and quarries regulations applicable to onshore and offshore north of 60°. It is hoped these will be promulgated in the coming year. Aside from continuing to participate in Native Claims negotiations, the Division will also continue representing the Northern Program at oil and gas exploration agreement negotiations where environmental aspects are being considered.

## **Northern Affairs Program**

### **Northern Policy and Coordination Branch**

#### *Office of Northern Research and Science Adviser*

One of the functions of the Northern Policy and Co-ordination Branch is to provide the focus within the Northern Affairs Program (NAP) for matters relating to northern science and research. Thus, the Northern Social Research Division has become The Office of the Northern Research and Science Adviser, reporting directly to the Director General of the Branch. The mandate of his Office is to advise NAP and other government departments, industry and universities on northern scientific matters; to encourage a co-ordinated and effective approach within the Northern Program to funding and implementing NAP scientific activities in the North; to promote northern science development; and to manage research and scientific and technological activities between Canada and other circumpolar countries. Various projects were carried out through in 1982-83: Dr. Robert M. Bone, Department of Geography, University of Saskatchewan began a study to establish a data base for monitoring the demographic, economic and social changes caused by the Norman Wells Oil Field Development and Pipeline Project. The database will include information on population, occupations and income, and surveys of business services, public services, wages and prices and shopping patterns. Data on the extent and importance of the traditional economy and local perceptions of the Norman Wells project will also be included in the data base.

The Northern Scientific Training Grants Program allocated \$625 000 to 22 Canadian universities to help them provide advanced students with professional experience in the North. Universities receiving Northern Scientific Training Grants are encouraged to develop multi-disciplinary northern studies to attract students to northern-oriented careers. An evaluation of the Program recommended changing its guidelines, which is being done.

The Branch provided policy direction to the two major Scientific Resource Centres located at Inuvik and Igloolik. The equipment of Igloolik and its Sarcpa Lake field station was upgraded to meet safety standards.

The Circumpolar Affairs Section continued to monitor socio-economic and related developments in the foreign North. Several studies were supported, and a report, *The USSR Northern And Far Eastern Coasts: Petroleum Geology and Technology, Mining Activities And Environmental Factors*, was prepared by Dr. A.A. Meyerhoff.

The group is also completing a Working draft on *A Collection of General Information maps on Alaska, Greenland, Scandinavia and the USSR*.

# Department of National Defence

## Research and Development Branch

### Responsibilities

The Research and Development Branch develops and carries out the Department's scientific policy and manages its R&D program. The Branch is responsible for finding solutions to scientific and technical problems relating to departmental operations and equipment. It also carries out a variety of research projects aimed at acquiring knowledge relevant to military operations in the North. Finally, it tests and evaluates equipment and systems for use in Arctic or other adverse environments.

### Review 1982-83

The internal R&D program of the Department is conducted in its six Research Establishments. During 1982-83, five of these Establishments were involved, to some degree, in research related to Northern activities, and a number of research contracts were awarded to Canadian universities and industries in support of this research. In addition, the Military Engineering Research Group at the Royal Military College in Kingston, Ontario (RMC/MERG), conducts research on problems associated with engineering in a northern environment.

The Defence Research Establishment Pacific (DREP) activities in the North in 1982 included: a small expedition to Nansen Sound in April to carry out general maintenance of the DREP camp located on the smaller Fjeldholmen Island; a small expedition to the Ward Hunt Ice Shelf in April and May to study the characteristics of the Shelf, including the establishment of a semi-permanent camp on shelf ice about five km from shore; a small field party to Jones Sound in August and September to carry out general maintenance of the DREP camps near Grise Fiord; and participation in a co-operative Canada/USA experiment north of Alaska in October, during which geomagnetic activity measurements were made.

A continuing activity initiated by the Defence Research Establishment Valcartier (DREV) consists of determining how storing the CRV7 rocket motor in a variety of climatic conditions for long periods of time affects its service life. Motors are being stored at Canadian Forces Station (CFS) Alert as part of the trials. Prototype development has proceeded on a smoke marker for use in military search and rescue operations and in low altitude parachute extraction operations in the Arctic environment.

Scientists in the Protective Sciences Division of the Defence Research Establishment Ottawa (DREO) are responsible for carrying out research on clothing and protective equipment for use under harsh environmental conditions. During 1982-83, research activities included: basic studies of heat and vapor transport in insulation; optimization of the distribution of insulation within sleeping bags and garments; design and testing of face masks for use in cold, windy conditions; and work on the "architecture" of tents and the design of inflatable structures. Various items of cold weather clothing, sleeping bags, and face masks were field tested as part of Exercise Sovereign Viking 82 and, in November 1982, similar items were tested on survival exercises conducted by Headquarters Northern Region, approximately 100 km from Yellowknife.

In another ongoing program at DREO, scientists are developing applications for lithium sulfur dioxide batteries. They have a higher energy density than existing types (resulting in a smaller, lighter package) and, more importantly, they perform well in low temperatures. Lithium sulfur dioxide batteries are well adapted to northern applications, particularly in search and rescue/survival equipment such as Emergency Location Transmitters, Crash Position Indicators, Personal Locator Beacons and Radar Transponders, and in other portable equipment such as radios. Other battery-related developments are improvements to the low temperature cranking capability of the BB-248 lead acid battery used for starting vehicles.

Various research activities related to testing military vehicles in northern terrain continue both in-house and under contract by the Defence Research Establishment Suffield (DRES). Specific activities include testing the performance of vehicles on snow and muskeg; terrain analysis, including investigations of remote sensing techniques for northern terrain and snow; and starting and operating military vehicles in cold regions.

Scientists at the Defence and Civil Institute of Environmental Medicine (DCIEM) carry out research to improve the protection and performance of military personnel. The Institute's activities include programs to investigate human responses to stresses such as extreme heat or cold, high altitude, and acceleration; programs on physical fitness, aerospace life support systems; infection and immunity; and deep diving. Research projects also include behavioural and bio-science investigations relating to air, land and sea operations.

During 1982-83, the DCIEM Thermal Group expanded its research into the physiological effects of exposure to cold. The Group has added both professional and technical people to its staff. The programs begun in the previous year are either continuing, or in the analytical stage. Several new projects related to helping the Canadian Forces cope with Arctic problems were initiated. Scientists from DCIEM took part in two military cold weather exercises this year (Exercise Sovereign Viking 82-1 with Canadian Forces troops at Resolute Bay and a dietary requirement study with Swedish troops in Sweden) as part of a continuing effort to keep research personnel familiar with the real problems of working in Arctic environments. Under Project FLIC, laboratory research continued under simulated Arctic conditions into body's response of the body to breathing warm air while working in the cold. Computer analysis of the data is underway.

A joint study was undertaken between scientists at DCIEM and DREO to examine the influence of body composition (primary subcutaneous fat thickness) on surface temperature at various body sites. Frostbite research using animals began recently. It is expected to continue for some time as an area of both applied and basic research. Another new project is an evaluation of the relationship between rate of body cooling and muscularity. Such studies may help to determine the relationship between diet and a person's ability to tolerate cold. Work has also begun on studying the body's thermoregulatory response to cold as a function of time of day, and evaluation of various methods of rewarming mildly hypothermic subjects is continuing as part of the same work. A joint study between the DCIEM Thermal Group and staff of the Medical Life Support Division to evaluate the thermal properties of cold water immersion suits for Canadian Forces aircrew also began recently. It will continue for several months.

Ongoing research projects at RMC/MERG in 1982-83 included: studies of the freeze-thaw resistance of concrete; the construction of pavements over highly compressible terrain; soil stabilization for roads and runways in the North; ditching and cratering in frozen soils; the geothermal characteristics of continuous and discontinuous permafrost in the Canadian Arctic; waste water treatment in Arctic regions involving field work at Alert; and extension of a geothermal model to soil conditions at Alert to support the Arctic runway study.

### **Plans for 1983-84**

The DREP Arctic season will involve small expeditions to Nansen Sound, Yelverton Bay, Barrow Strait and Jones Sound in July to carry out acoustic measurements. Another small expedition to Assistance Bay (south Cornwallis Island) in July 1983 will carry out geomagnetic activity measurements. A major field trial will also be conducted in co-operation with the CESAR project along the northwest coast of Ellesmere Island in April. The trial will involve building small, semi-permanent camps at the mouths of Yelverton Bay and Milne Fiord, and small field operations will be carried out from DREP camps at Nansen Sound and Ward Hunt Ice Shelf. A modest field trial is also planned in the Barrow Strait/Jones Sound

areas in August and September to carry out maintenance of DREP camps. The operation will be conducted with the support of the *CCGS Sir John A. MacDonald* and a team of Canadian Forces divers.

Until approximately 1990, DREV will continue the service life trials of the CRV7 rocket motor, involving storage of motors at CFS Alert. Prototype development and field testing will continue on the smoke marker for use in military search and rescue operations in the northern Arctic environment.

DRES will continue its research into the mobility of military land vehicles. This research will include work on northern terrain transects.

The DREO program in battery research will continue in 1983-84. Climatic evaluations and field trials will be conducted on several battery applications. A variety of northern clothing and protective equipment will be tested. Work will concentrate on determining the insulative quality of Arctic sleeping bags and clothing.

DCIEM will continue its research aimed at improving the protection and performance of Canadian Forces Personnel in cold environments. In addition to many in-house projects, work on several research contracts is expected to get underway shortly, utilizing the expertise available in Canadian university departments across the country. These include calorimetry studies to validate the use of heat flux transducers in measuring body heat losses in field studies; and further animal and human studies of the interactions between body biochemistry, metabolism, and heat production and loss.

## **Polar Continental Shelf Project (PCSP)**

### **Responsibilities**

The Polar Continental Shelf Project (PCSP) is responsible first, for carrying out scientific investigations unique to the Arctic and, second, for maintaining and improving scientific logistic support systems there. In fulfilling the second responsibility, the Department provides and maintains base camps, a radio network, and aircraft with experienced crews. The Project supports research in disciplines within the mandate of EM&R and other government departments. Field resources are also made available to approved university and other non-government research projects.

### **Review for 1981-82**

Field work was carried out from mid-February to late September. It was co-ordinated from Tuktoyaktuk in the Mackenzie Delta and from Resolute on Cornwallis Island.

In 1982, PCSP supported 167 scientific parties in the Arctic. The hydrographic/gravity survey completed work in the M'Clintock Channel-Peel Sound area. Several archeological parties concentrated on areas adjacent to the Northwest Passage. Wildlife studies are continuing with a view to establishing base line data in areas where industrial activities have been carried out. The oceanographic investigation organized by the Working Group under the Sub-committee on Arctic Oceanography continued for a third year.

In 1982, the Polar Continental Shelf Project supported the following agencies in their Arctic research:

Arctic Institute of North America  
 Defence Research Establishment Pacific  
 Department of Agriculture  
 Department of Communications  
 Department of Energy, Mines & Resources Canada  
 Department of the Environment  
 Department of Fisheries & Oceans  
 Department of Indian Affairs & Northern Development  
 Government of Northwest Territories  
 Government of Yukon  
 Milwaukee Public Museum  
 National Museums of Canada  
 National Research Council  
 New Bedford Whaling Museum  
 Northwest Territories Heritage Centre  
 Sir Sandford Fleming College  
 Transport Canada  
 U.S. Navy Research Laboratory  
 University of Alberta  
 University of British Columbia  
 University of Brock  
 University of Calgary  
 University of Guelph  
 University of Hokkaido  
 University of McGill  
 University of McMaster  
 University of Memorial  
 University of Ottawa  
 University of Toronto  
 University of Victoria  
 University of Washington  
 University of Western Ontario

The following is a summary of work to which PCSP contributed support:

Archaeology: King William Island  
 Investigator: O. Beattie, University of Alberta

The 1982 survey of the northwest coast of King William Island located six archaeological sites connected with the Franklin expedition. Eighty-two artifacts and the remains of from eight to thirteen crewmen were discovered in these sites. Forensic analytical techniques may disclose the reasons for the disaster. Evidence supports M'Clintock's belief that the crew was actually returning to the abandoned Erebus and Terror.

Archaeology: Stanwell-Fletcher Lake  
 Investigator: E. Bielawski, Prince of Wales Northern Heritage Centre

The Northern Cultural Heritage Project continued archaeological excavation on Paleoeskimo sites at the west end of Stanwell-Fletcher Lake. With nine students from N.W.T. communities, the crew excavated six early Arctic Small Tool tradition (AST) habitation features on PeJv-3, a small site with a total of 13 features. This excavation provides valuable comparative material for that collected since 1979 at PfJv-2, which is a large, complex site (about 260 features) with remains from early AST through recent Inuit occupations located three kilometres distant.

The PeJv-3 excavation has yielded the first evidence from Stanwell-Fletcher Lake of Independence I cultural characteristics, such as well-defined stone mid-passages and slight edge serration of thin, tapered stem points. The excavation also yielded charcoal samples which have been submitted for radio-carbon dating. At Aston Bay, on northern Somerset Island, artifacts and features show attributes that may be associated with either Independence I or PreDorset occupations. The nature of the temporal and cultural relationships between these two groups will be one of the major foci of the final project analysis.

Archaeology: Northern Devon Island  
 Investigator: J.W. Helmer, University of Calgary

A survey was undertaken in the Cape Sparbo-Truelove Lowland area to discover the number and nature of archaeological sites and to study the hunting and settlement patterns of the different prehistoric inhabitants of the north coast of Devon Island. A total of 59 sites was discovered. Arctic Small Tool tradition, Dorset and Thule cultures have been identified. There is reason to believe that most of these sites were used during the Thule Culture period or Historic times and that they did not relate to the very early occupation of the study area.

Archaeology: Navy Board Inlet, Eclipse Sound  
 Investigator: G. Mary-Rousseliere - Individual

Archaeological investigations carried out during the 1982 season at Nunguvik (Pg Hb-1) and at the rapidly eroding site of Saatuit (PeHa-1) in the Navy Board Inlet/Eclipse Sound area of Northern Baffin Island, in continuation of previous work, have brought more information on the Middle Dorset period in the region. The large house complex at Nunguvik is probably the equivalent of the long house in other regions. It becomes also clearer that during this period, (in contrast with what is known of the Dorset culture elsewhere), the Dorset people of the region were very much caribou-oriented and possessed a typical industry of numerous caribou bone tools, even at the sealing camp of Saatuk.

Archaeology: Skraeling Island  
 Investigator: K.M. McCullough, University of Toronto

The project was designed to provide more data on the early Thule culture occupation of the Bache Peninsula, particularly as related to the Ruin Island phase.

The 1982 activities involved midden testing outside of a number of dwellings, excavation of the entrance tunnels of several house structures, and the total excavation of House 7, a multi-roomed Thule culture winter house initially tested in 1978.

Archaeology: Beaufort Sea Region  
 Investigator: R. McGhee, National Museum of Man

Visits to sites which had been excavated in 1969 and 1970 gave a rough measure of the coastal and riverine erosion which had occurred over the years. At coastal sites such as Kopuk and Point Atkinson erosion had been severe, with the latter site having entirely disappeared. Even in the sheltered waters of East Channel, erosion has reduced the width of the isthmus which contains the main deposits at Kittigasuit from over 8 m to less than 3 m. In all coastal regions visited, erosion appears to be continuing at an extremely rapid rate. Nicholson Peninsula, which was a peninsula in 1964 when mapped by aerial photography, is now an island separated from the mainland by over 1 km. It is suggested that most of the coastal archaeology in the region has disappeared due to coastal erosions. McKinley

Bay is the only region of the area that appears likely to be greatly affected by hydrocarbon activities.

Archaeology: Boothia Peninsula,  
King William Island  
Investigator: J.M. Savelle, University  
of Alberta

The 1982 investigations constituted the final season of archaeological research to examine the effects of nineteenth century European exploration on the development of the historic Netsilik Inuit culture.

A total of 75 archaeological sites were recorded as to location, local physical characteristics, site content and cultural affiliation.

The 1982 survey contributed significantly to the archaeological data base relating to Paleoeskimo, Thule, Early Historic and Recent Inuit occupations in the Netsilik 'core' area. The examination of several historic sites directly related to the Ross, Franklin, and several Franklin search expeditions proved useful in evaluating the accuracy of several historic documents.

Biology: Arctic Char, Lancaster  
Sound and Cornwallis  
Island  
Investigator: E. Gyselman, Fisheries  
& Oceans

Lancaster Sound is currently considered the most favourable location in which to study energy flow from the primary producers to the terminal predators in a marine system. A preliminary survey of the south coast of Devon Island and the northeast coast of Baffin Island was conducted in August 1982.

The Arctic char populations of Nelson and Char Lakes near Resolute were part of the ongoing research on the thermodynamics of Arctic lakes. The population structure of both these lakes closely resembles that found during previous samplings some years before, in spite of severe exploitation particularly in Nelson Lake. The theory is also supported that there is an optimum size for individuals in a lake based upon the thermodynamics of the lake ecosystem. Moreover, contrary to popular theory, it was demonstrated that perturbed populations of Arctic char attempted to maintain the original structural configuration and return to equilibrium without oscillation.

Biology: Algae, Cardigan Strait,  
Devon Island  
Investigator: H. Welch, Fisheries &  
Oceans

The objective was to measure gross photosynthesis, chlorophyll a, silica, nitrogen and phosphorus in a High Arctic polynia. Integrated photosynthesis will be modelled. Chlorophyll a concentrations increased from background levels in May and June and peaked in early July and again in mid-August. Suspended nutrient concentrations increased in late July, decreased sharply in early August, and peaked again in late August, showing a bimodal pattern to chlorophyll a. Dissolved nutrient concentrations gradually decreased throughout summer, and dropped sharply in late August. Silica also dropped sharply in late August.

It appears that the seasonal pattern of primary production in the polynia in 1982 was not very different from the seasonal pattern found previously in the sea off Resolute.

Biology: Amphipods, Resolute,  
N.W.T.  
Investigator: P.E. Oshel, Memorial  
University of  
Newfoundland

The primary objective was to collect under-ice amphipods, a major component of the Arctic food-webs. The species collected were the same as that found at Point Barrow, Alaska, which is interesting, given the differences in environment. Few of the forms that feed on micro-algae were collected and few of the main scavenging genus, *anonyx* spp., were caught. Many *Pseudalibotus* (= *Onisimus*) *litoralis* and *Ps.* (= *O.*) *nansenii* were caught. This is a group that seems to be adapted both as a scavenger-like *Anonyx*, and as a detritus-feeder.

Biology: Benthic Surveys:  
Tuktoyaktuk Penin-  
sula, Hutchinson,  
McKinley Bays  
Investigator: P. Wainwright,  
Environment Canada

The objective of the Shorebase Survey is to determine the impact of industrial activities at McKinley Bay, Tuft Point and Tuktoyaktuk Harbour by comparing shallow and deep water zones seasonally and on a year to year basis. This program focuses on levels and distribution of hydrocarbons and heavy metals in sediments and benthos.

Another survey was undertaken to determine the relationship between existing levels of contaminants and sediment properties along the Tuktoyaktuk Peninsula coast.

Biology: Barren-Ground Caribou,  
Itza Lake, N.W.T.  
Investigator: F.L. Miller, Environ-  
ment Canada, C.W.S.

Helicopter searches were made for dead caribou on the Beverly herd calving ground in the District of Keewatin. Six cows and 107 calves were found and autopsied. The causes of death were determined with certainty for 90 calves: wolf predation, 76.7%; fetal or neonatal atelectasis, 10.0%; separation or abandonment 3.3%; patho-physiological 5.6% and pneumonia 4.4%.

Percentage occurrence of fetal or neonatal atelectasis in 1982 was low when compared with the value of 34.3% for the Beverly herd in 1981 and the value of 28.8% from the Kaminuriak herd in 1970.

Four adult cows had died from complications associated with giving birth while the other two cows were non-pregnant 2-year olds; one had been killed by a wolf and the other died from undetermined causes.

Biology: Beverly Caribou, Itza  
Lake, N.W.T.  
Investigator: A. Gunn, Government  
of Northwest  
Territories

Data were obtained to describe the daily activity patterns of barren-ground caribou cows and their newborn calves on the calving ground of the Beverly herd. The frequency of specific behavioural patterns such as nursing and aggressive

events as part of a baseline rigorous description of "normal" caribou behaviour was also described. A controlled disturbance experiment using a helicopter as a relatively distant source of disturbance was carried out. Although helicopters flew at 300 m above ground level and landed almost 1 km from the cows and calves, it was found that the animals were readily displayed from the study site. Even on the few occasions that they stayed in view of the ground observers, the activity patterns and use of plant range types were interrupted. The results reiterate the need to avoid human-caused disturbances on the calving grounds of the barren-ground caribou.

**Biology:** Caribou Migration,  
Richardson Mountains  
**Investigator:** D. Russell, Yukon  
Government

Surveys were flown to determine the distribution of wintering caribou in the eastern Ogilvie and Wernecke Mountains. With the aid of relocating radio-collared caribou and low level reconnaissance, the degree of overlap between resident Woodland Caribou herds and the Porcupine Herd was assessed.

A composition count conducted on a sample of 1 075 caribou from the Bonnet Plume Herd yielded a short yearling to cow ratio of 55 ca/1 000. This over-winter calf survivorship is larger than most populations' initial calf crop, and suggests that this population of approximately 5 000 caribou is stable and increasing. A management recommendation to increase the bag limit from one to two caribou per season has been made.

The Porcupine Herd surveys were expanded to examine the spring migration routes. About 20 000 Barren Ground Caribou migrated straight north along the western flank of the Richardson Mountains. This migration marked the first time since the spring of 1974 that a large segment of the Porcupine Herd used the Richardson migration route. Previous winter distribution observed, as evidenced by snow tracking sign, was within the drainage area of the north and south Tatonduk Rivers. Little hunting took place along this route.

**Biology:** Caribou Migration,  
Prince of Wales Strait  
**Investigator:** D.C. Thomas, Environ-  
ment Canada

The caribou on Banks and northwestern Victoria Islands are Peary caribou. Caribou on other parts of Victoria Island are believed to be intermediate forms, more like barren-ground caribou. The presence of caribou on northwestern Victoria Island that have characteristics of those on Banks Island suggests that movements may occur across Prince of Wales Strait. Knowledge of when and where movements occur is necessary to assess the possible effects of proposed tanker traffic through the Strait. Aerial reconnaissance surveys revealed no indication of inter-island movements. Information obtained from hunters in Holman on caribou movements suggest that caribou do cross between Victoria and Banks Islands sporadically in small groups. They have no knowledge of distinct movements at certain times, which would indicate a migration.

**Biology:** Entomology,  
Tuktoyaktuk  
**Investigator:** R.A. Ring, University of  
Victoria

A research project continues on the low temperature tolerance and intolerance of insects and other terrestrial arthropods in the Arctic. Data on snow depth and temperature, a Larval collection and an over-wintering study were observed.

The collection and transfer to Victoria of 5 100 living caddisflies (8 species from three families) were carried out. These insects will be used for larval-adult associations and super-cooling and biochemical analyses. This is probably the first time in North America that such experiments have been done with aquatic insects.

**Biology:** Fish Distribution,  
Southern Victoria and  
King William Islands  
and Simpson  
Peninsula  
**Investigator:** B. Stewart, Fisheries &  
Oceans

Freshwater fish, zooplankton, phytoplankton, and water samples were collected during August and September 1982. Data on growth rates, diet, parasitism, reproduction, distribution and abundance are being analysed. This information, together with commercial and domestic fish utilization data, wildlife observations and data from previous freshwater and marine studies will be drafted onto land use maps.

**Biology:** Fish Migration,  
Tuktoyaktuk Harbour &  
Lakes  
**Investigator:** M. Lawrence, Fisheries  
& Oceans

A study representing a preliminary examination of the ichthyoplankton of Tuktoyaktuk Harbour was conducted. Its main objectives were to identify the species of larvae found and those probably the result of local spawning activity, their spatial distribution, abundance and growth. Seven and possibly eight species of larvae were captured, using plankton nets of diameter 0.5 m and mesh size of 760 µm. Rainbow smelt was by far the most abundant species found throughout the harbour. It was most numerous in the surface waters. Pacific herring was next in abundance, but far less numerous than smelt. Saffron cod and starry flounder larvae were more prevalent at a depth of 4.0-7.5 m. two kinds of lumpenids occur in the harbour.

During 1982, a more intensive study was conducted on Freshwater Creek, and further work was done on the lakes to gather morphometric, physico-chemical, and biological data.

Thirty-nine % of broad whitefish were in the upstream run, but less than 1% of those in the downstream run were less than 200 mm in fork length, suggesting that young broad whitefish may spend several years in tundra lakes before returning to coastal waters.

Several lakes in the Freshwater system and one in the Mayogiak system were shown to provide overwintering habitat for anadromous coregonids.

Biology: Pacific Herring,  
Beaufort Sea  
Investigator: D.V. Gillman, Fisheries  
& Oceans

Operations were expanded to increase knowledge on the spawning locations and availability of pacific herring to commercial gear in the Liverpool Bay area. Test netting was conducted through the ice and after ice breakup to establish the spawning interval and peak spawning period. A sample of herring roe was collected and preserved for analysis and comment from commercial buyers. A total of 400 pacific herring was sampled for length, weight, sex, maturity and age.

Biology: Fish Resources,  
Mackenzie Delta  
Investigator: A. Kristofferson,  
Fisheries & Oceans

Arctic char inhabiting the Rat and Big Fish rivers on the west side of the Mackenzie Delta are believed to be heavily exploited by subsistence fishermen.

During September the Rat and Big Fish rivers were surveyed and suitable sites for fish weir operations were selected on each river. Spawning aggregations of char were encountered in the headwaters of both rivers; 20 specimens were collected from the Rat River and 20 from the Big Fish River. Subsequent analysis revealed no certifiable bacterial pathogens.

In addition, a disease survey of major Arctic char populations in the N.W.T. was initiated. Plans included the collection of specimens of Arctic char from both drainage systems and analysis for certificate bacterial and viral pathogens.

Analysis of five tissues to determine virus residency demonstrated that the kidney, pyloric caeca, pancreas and spleen were the target organs.

Biology: Brant Goose-Greater  
Snow Goose, Baffin  
and Bylot Islands  
Investigator: A. Reed, Environment  
Canada-CWS

The Greater Snow Goose population is now almost twice as large as it was in the early 1970's. The two main objectives of this project were first, to quantify the numbers of adult geese breeding on Bylot Island and Jungerson Bay and, second, to study habitat use by goose broods on Bylot Island, looking particularly for evidence of overgrazing of herbaceous vegetation.

The density of goose broods appeared to be positively influenced by two major factors: the presence of lush graminaceous vegetation and island pools (especially where the water areas were associated with tundra polygons). A project to band Atlantic Brant was unsuccessful due to logistical problems.

Biology: Limnology, Little  
Cornwallis Island  
Investigator: M. Dickman, Brock  
University  
M. Ouellet, Université  
du Québec

Garrow Lake on Little Cornwallis Island is one of the most northerly meromictic lakes in Canada. The main objectives of the present study were to broaden our knowledge of the chemical and biological nature and origin of this unusual lacustrine environment and to determine the impact of subsurface (25 m) discharge of lead and zinc mine tailings on the lake's biota and water chemistry. Garrow Lake was visited in August 1980, '81 and '82 to take water samples. It is one of the saltiest lakes ever recorded in high latitudes. The physical chemistry, phytoplankton, zooplankton and photosynthetic bacteria samples have been analysed. The state of the lake before and after use as a mine tailings depository can be evaluated.

Biology: Ornithology, Penny  
and Barrow Straits,  
Makinson Inlet,  
Boothia Peninsula  
Investigator: S.D. MacDonald,  
National Museum of  
Natural Sciences

Eight new colonies of ivory gulls comprising several hundred birds were located on Nunatak in the interior of the Ellesmere Island ice cap. Three small colonies on gravel plateaus on north-western Brodeur Peninsula were investigated, and all young were banded. These, with adults banded at Grise Fiord, totalled 113 for the year. A series of mosses and vascular plants from Nunatak and polynia environments was collected. Also noted at Penny Strait was the unsuccessful nesting attempts of three pairs of Ross's Gulls.

Biology: Ornithology-Falcons,  
Northern Yukon  
Investigator: D.H. Mossop, Yukon  
Government

The peregrine falcon, gyrfalcon, golden eagle, bald eagle and osprey have been inventoried for the population and dynamics of birds of prey in the Arctic drainage of Yukon. Resurvey has been conducted annually to monitor changes in density and productivity. A dramatic decline in tundra peregrine falcons was documented and has resulted in the complete disappearance of the species in Yukon. Gyrfalcon have remained stable; golden eagle density is relatively high in the area; bald eagles are on the edge of their northern distribution and osprey occur in a relatively healthy population on the southern limit of the coastal drainage at Old Crow.

The results have made valuable contributions to management plans for raptors, particularly the gyrfalcon. They have documented the demise of the tundra peregrine.

Another project was Harvest Experimentation with Yukon gyrfalcons, young gyrfalcons being removed and transferred to individuals attempting to breed the species in captivity. Harvest at or less than 5% of annual productivity has no effect on numbers. However, large fluctuations in productivity necessitate population monitoring annually prior to harvest.

Biology: Ornithology, Truelove Lowland and Alexandra Fiord  
Investigator: D.L. Pattie, Northern Alberta Institute of Technology

Bird population surveys with estimated densities were conducted during 1982. Data for Truelove Lowland reveals that for the 43 km<sup>2</sup> lowland the density would be 48 birds per km<sup>2</sup> — a high population density for any of the Arctic Islands.

Surveys in June and August at Rae Point revealed densities of 18 birds per km<sup>2</sup> and 6 per km<sup>2</sup> respectively. A survey at Alexandra Fiord indicated a density of 42.6 per km<sup>2</sup>.

Biology: Paleobiology, Banks Island and Tuk Peninsula  
Investigator: C.R. Harrington, National Museum of Natural Sciences

Intensive sampling of the organic deposits of Unit 6 in the Morgan Bluffs sections of pre-Sangamon interglacial age) yielded 16 large samples. These samples contained abundant plant macro-fossils including birch and will be wet-screened for further micro-vertebrate remains.

Ice age bison fossils were collected near Nicholson. Modern bird and fish specimens and a collection of vascular plants for the National Herbarium were taken in the vicinity of Tuktoyaktuk.

Biology: Polar Bear, Radstock Bay, Dundas Island  
Investigator: I. Stirling, Environment Canada

Research continued on the ecological interrelationships of polar bears. Field work and data collection on polar bears, seals and walrus around polynya areas were based out of Dundas Island and Resolute. Under-ice seal and walrus vocalizations were recorded, and data were recorded on ice conditions to study the distribution of wintering populations in relation to polynya, ice conditions, freeze-up patterns, distribution of pupping areas and proposed shipping lanes.

Biology: Polar Bear, Northern Eastern Baffin Island  
Investigator: R. Schweinsburg, Government of Northwest Territories

During the 1981 field season, 65 polar bears were tagged on Northeast Baffin Island. The objectives of the study were to determine population size, range and distribution; to assess quotas for Clyde River and Broughton Island; and to assess the impact of oil development. Capture rate was half of what had been expected. In 1982, 17 bears were captured, marked and released. None of the bears had been marked previously. The capture rate in 1982 (0.37 bears/hour flown) was lower than that in 1981 (0.47 bears/hour) and considerably lower than that experienced in Lancaster Sound (1.2 bears/hour). As in 1981, the subjective feeling was that very few bears were spread over a large area. The Canadian Wildlife Service and others maintain an interest in the development of a harness and collar design for satellite telemetry work. N.W.T. placed units on 8 females in Barrow Strait during May. Only one unit was still transmitting as of October 1982.

Biology: Seals and Beluga Whales, Prince of Wales Strait  
Investigator: T.G. Smith, Fisheries & Oceans

Studies of the ecology and underwater vocal behaviour of bearded seals were initiated in the southern Prince of Wales Strait area. This is in the area of a proposed passage of LNG and oil tankers. The objectives of the research were to define the diet and seasonal vocal behaviour of bearded seals, to delimit local concentrations of this species and to determine the distance of sound propagation of the various calls. Radio transmitters were affixed to some seals at Dundas Harbour. Aerial surveys were undertaken to photograph beluga whales along the Barrow Strait-Lancaster Sound floe edge. These will be used to determine estimates of numbers, age structure and pod composition as a part of an ongoing program on beluga whale behaviour. The Cunningham Inlet station was occupied again to study beluga whale behaviour.

Biology: Migratory Birds, Beaufort Sea  
Investigator: L. Allen, Environment Canada

This study was intended to compare bird usage of the McKinley Bay area before and after harbour development. There was no significant difference in the number of diving ducks using McKinley Bay in 1982 compared to 1981, with the exception of scaup, which were less common in 1982.

Additional surveys were conducted and the information obtained from these surveys included species composition of diving ducks in McKinley Bay, the timing of the moult of flight feathers and the effect of tide, time of day and wind on the distribution of the ducks in that area.

Another survey gathered information on bird habitat along the coast of the Beaufort Sea. All data on bird distributions will be compiled on maps to delineate important bird habitat vulnerable to oil pollution. These maps can be used to assist in oilspill clean-ups.

Biology: Ornithology, Mackenzie Delta, Anderson River  
Investigator: T.W. Barry, Environment Canada

The second of a three-year investigation of the last known nesting habitat of the Eskimo Curlew was completed. Surveys of nesting Tundra Swans were conducted in the Mackenzie Delta-Anderson River plains region. Variations were measured in nesting success vis-a-vis weather conditions. The migration routes, staging areas, and nesting success of Snow Geese at Kendall Island, Anderson River Delta and Banks Island were also monitored.

Biology: Seabird Census, Hudson Strait  
Investigator: A.J. Gaston, Environment Canada-CWS

Activities included aerial surveys, studies of breeding performance and census work. Work involved a continuation of studies on the ecology of seabirds breeding on Digges Island, at Cape Wolstenholme and an adjacent small

islets in Hudson Strait. Also near Nuvuk Island, studies concentrated on the reproductive ecology of Black Guillemots and the ecology of their major prey species. On Atpatok Island, studies were conducted of the breeding ecology of Thick-billed Murres and census work was done on the two large colonies situated on the island. Two people camped on 'Hantzsch' Island, off the north coast of Edgell Island to carry out a census of seabirds of this previously unvisited colony.

**Biology:** Seabirds, Jones Sound  
**Investigator:** R.W. Prach,  
 Environment  
 Canada-CWS

Observations on the reproductive biology of Common Eiders, Terns, Thayers and Glaucous gulls were made at St. Helena, Devil and Calf Islands. Data on 635 breeding pairs of Eiders, 30 pairs of Thayer's gulls, 50 pairs of Glaucous gulls, 10 pairs of Arctic Terns as well as morphometric and food habits data collected from 70 fulmars and 16 Black guillemots are currently being analysed. These data will be used to develop a model to aid in predicting the effect of offshore hydrocarbon development and marine transportation on polynya areas important to marine wildlife.

**Botany:** King Christian Island  
**Investigator:** L.C. Bliss, University of  
 Washington

Preliminary results of a study of nitrogen fixation in soils and the importance of microsite to the distribution of vascular plants suggest that competition between mass and vascular plants does exist and does inhibit optimal growth of vascular plants. However, vascular plants do not move into the exposed bare spaces to escape competition because the environment there is far too harsh to support plant growth due to lower soil moisture and higher windspeeds.

**Botany:** Richardson  
 Mountains, Yukon  
**Investigator:** W.J. Cody, Agriculture  
 Canada

The Richardson Mountains were unglaciated during the last glacial epoch. Therefore, they are of considerable phyto-geographic interest. Little botanical work had been done previously in the region and no mycologist or entomologist had ever had the opportunity to collect specimens there.

Over 2 300 vascular plants, 700 mycological specimens and over 5 000 insects were collected from 51 alpine and sub-alpine sites. There was a considerable number of important finds in all three groups. All the specimens will be used in ongoing studies of northern plants, fungi and insects. The plants will be included in a publication *Flora of the Yukon Territory*.

**Botany:** Alexandra Fiord  
**Investigator:** J. Svoboda, University  
 of Toronto

Research projects continued with the study on Plant Communities along the foothills of Garfield Range from a camp at Lake Hazen. A new project was initiated in association with the Agriculture College at Guelph, Ontario. Its objectives were to test various vegetable crops and four northern varieties of potatoes. Nine light "Igloo" greenhouses and one large greenhouse were built in the lowland at Alexandra Fiord, and the feasibility of high Arctic greenhouseing was successfully demonstrated.

**Botany:** Braya, Cornwallis,  
 Devon and Ellesmere  
 Islands  
**Investigator:** J.G. Harris, University  
 of Alberta

Specimens from seven populations of Braya from Cornwallis, Devon and Ellesmere Islands were collected. These collections fill a critical gap in this investigator's study of the genus. Cytological, morphological and greenhouse studies continue.

**Climatology:** Meteorology,  
 Alexandra Fiord  
**Investigator:** C. Labine, University of  
 Alberta

An automatic data acquisition system has continuously logged data since the end of the 1981 field season. This system allows long term data to be collected without making frequent visits to the field sites.

All the recording stations were deployed in May at Alexandra Fiord. All data have been entered into the computer and undergone an initial edit and analysis. Apart from the meso-scale network of climatic stations, intensive surface energy budget work was conducted over various types of plant communities. Included in this intensive work was the use of an eddy-correlation package consisting of a sonic anemometer and a lyman-alpha hygrometer used to measure the sensible and latent heat fluxes. This is the first time this technique has been used over tundra surface. Although the climatic database for Alexandra Fiord is short, there are indications of the main characteristics and controls of this oasis area. Higher values of incoming shortwave radiation, atmospheric longwave radiation and absorbed net radiation all lead to an improved climatic regime.

**Coastal Classification:** South Victoria  
 Island and Northeast Keewatin Area  
**Investigator:** D. Welch, Environment  
 Canada

Detailed observations were made at 25 sites to determine shoreline classifications. Such classifications have been revised to meet regional conditions. The 24 maps in the study area will be submitted to the Northern Land Use program for publication in the Land Use Information Series.

Glaciology: Ward Hunt Island  
Investigator: M. Jeffries, University of Calgary

Renewed interest in the ice shelves of northern Ellesmere Island has arisen due to oil exploration in the Beaufort Sea.

During the period April 26 to June 7, 1982, a total of 76.91 metres of ice core was obtained from Ward Hunt Ice Shelf. It is believed that ice fabric, ice density, chemical and isotope analysis will add to the understanding of ice shelf structure, behaviour and origin. From 1967 to 1982 no major changes in ice conditions have occurred along the north coast of Ellesmere Island. Observations of ice conditions between Ward Hunt Island and Cape Evans revealed some interesting and important features. Hummocky multi-year ice is accreting at the Front of Ward Hunt and Milne Ice Shelves, but it is liable to be removed by shearing along the shelf front. The presence of moraines on the surface of Milne Ice Shelf is possible evidence of former floating ice tongues being partly responsible for ice shelf growth along the coast of Northern Ellesmere Island.

Glaciology: Ice Coring, Southern Ellesmere Island  
Investigator: M. Nakawo, Hokkaido University, Japan

Testing of new drilling equipment was undertaken in Canada prior to a full-scale project in Antarctica. The drill is thermal in nature and can take a core and recover melt water. The hole was terminated at a depth of 12 m due to mechanical problems.

Geodesy: Mapping Control Surveys, Western Arctic Islands  
Investigator: A.R. Eaton, Energy, Mines & Resources

The survey was designed to obtain field control for the 1:50 000 mapping program, to measure certain horizontal angles and distances and to strengthen the existing horizontal control network by positioning certain stations by Doppler. Increased accuracy at each new Doppler station was achieved. Also, in the Mackenzie Delta and Valley, nine new Doppler positions were established and three small conventional surveys conducted.

Geology: Bedrock, Northern Ellesmere Island  
Investigator: H.P. Trettin, Energy, Mines & Resources

A program to complete the bedrock geology of parts of nine map areas in northern Ellesmere Island was begun in 1975 and continued through to 1981. Seven sets of preliminary geological maps and notes have been released. The 1982 season was intended to clarify the most important remaining problems.

Proterozoic to Upper Silurian rocks were investigated; seven stratigraphic sections were measured; numerous stratigraphic structural and tectonic problems were clarified; significant fossils were located and a collection of zircon-bearing rock samples for isotopic age determinations was obtained.

A study of the upper Paleozoic rocks at de Vries Glacier, Markham Fiord, Clements Markham Inlet and McClintock Inlet is summarized; the succession at Markham Fiord belongs to a northern platform facies and may be interpreted as an extension of the Sverdrup Rim.

A structural cross-section of the Lake Hazen Fault Zone extending from east of the head of Tanquary Fiord to Ekblaw Lake will form the basis for a calculation of the crustal shortening involved and for a new interpretation of geometry and origin of this extensive structural feature. Another survey was made detailing descriptions of three stratigraphic sections of the Lower Cambrian Ellesmere Group and the underlying Ella Bay and Kennedy Channel Formations in the Kennedy Channel map area. The latter two units were previously regarded as Preterozoic but are now known to be Early Cambrian in age on the basis of a trilobite fragment found in the Kennedy Channel Formation.

Geology: Coastal Processes, Alexandra Fiord, Cape Herschel  
Investigator: S.B. McCann, McMaster University

The ultimate aim of this research is to develop a model of tidal flat genesis and development in an Arctic environment.

The 1982 field season was designed to collect information pertaining to the processes responsible for the contemporary development of Arctic tidal flats under severe winter sea ice conditions. Transsects from the supratidal zone, extending over the intertidal zone and over the subtidal zone were established at Alexandra

Fiord. Sea ice thickness was determined and meteorological and climatological conditions were monitored daily. A series of maps was produced illustrating the morpho-sedimentological expression of the intertidal and supratidal zones.

Information obtained from this study will provide specific measurements on the magnitudes and rates of ice-related processes and allow tidal flats in an Arctic environment to be placed within the evolutionary history of coastal development.

Geology: Geomorphic Processes, Banks Island  
Investigator: H.M. French, University of Ottawa

Fieldwork was undertaken on southwest Banks Island near Sachs Harbour on ice wedges previously examined in 1980. Other coastal sections along the west and southern coasts were investigated for ground ice exposures and several ground ice slumps suitable for process measurements were identified for future investigation.

Geology: Geomorphic Processes, Tuktoyaktuk Peninsula and Horton River  
Investigator: J.R. Mackay, Energy, Mines & Resources

The 1982 field season included carrying out observations on the maximum extent of glaciation; the origin and age of the extensive flights of unglaciated terraces which rises above the Horton River; geomorphic features associated with the breakthrough (estimated to be about 1800 A.D.) of the Horton River to Franklin Bay; development of permafrost and periglacial features since the breakthrough;

and areas of active combustion. Wood samples for an unglaciated terrace only a few metres above river level have been radiocarbon dated greater than 30 000 years. Other samples of ground ice are being analysed for oxygen isotope ratios and water quality.

Studies were also carried out on alluvial fans, ice-wedges, ground ice slumps and thermokarst features.

Geology: Geomorphic Processes, Horton River, N.W.T.  
Investigator: O. Slaymaker, University of British Columbia

Field work involved mapping and sampling sediments underlying the cliffed coastline between the mouth of Horton River and Melloch Hill. The nature and rate of evolution of the cliffs and associated alluvial fans and debris flows can be related to a breakout of the Horton River that occurred around 1800 A.D. At that time, the protection of the base of the cliffs by sediment accumulation on the delta of Horton River began. The field site affords a superb laboratory for studying sequential development of fluvial landforms as controlled by permafrost distribution.

Geology: Glacial Geomorphology, N.W. Greenland and Northern Ellesmere Island  
Investigator: J. England, University of Alberta

The field work was concentrated on outer central Hall Land between and including the lower Atka Elv and lower Graasten Elv. Surveys were made of the former extent of the sea (above present), both inside former ice limits, and beyond through the interior of Hall Land. Extensive shell collections were made, which will be radiocarbon dated. The tilt of former sea levels on adjacent Ellesmere Island does rise across Nares Strait towards the present Greenland Ice Sheet. Data will allow us to test the nature of unloading Greenland side which appears to coincide with previous Ellesmere findings. It may also be possible to confirm the extent of ice for the last glaciation and possibly document the presence of a full glacial sea, bounded by Greenland fiord glaciers, in the interior of Hall Land.

Geology: Paleobotany, Banks Island  
Investigator: J.C. Ritchie, University of Toronto

Pollen analysis and radiocarbon dating of a lake sediment core taken provides a complete record of the late Pleistocene and Holocene for this site. A section of lake sediment was successfully recovered from a lake in the central uplands of Banks Island.

Geophysics: Paleomagnetism, Ellesmere Island, Thule and Greenland  
Investigator: W.F. Fahrig, Energy, Mines & Resources

Oriented samples for paleomagnetic study were collected from three sections of Thule Group, eastern Ellesmere Island and two sections on the Greenland side on Northumberland Island and around Thule Air Base. Initial laboratory work suggests that the Thule Group material carries a stable remanent magnetization. Sediment transport direction should be determinable.

Geology: Paleontology, Lowther and Bathurst Islands  
Investigator: A.C. Lenz, University of Western Ontario

Work continued on a series of Emsian bioherms exposed on Lowther Island. Ten elongate "patch reefs" as long as 1/4 km are present, representing a spectrum of developmental stages in reef growth. Primary facies and secondary biofacies definitions and recognition on the basis of lithologic textures, microfacies characteristics and fauna are underway.

Studies of the diagenetic textures preserved indicate pervasive early submarine cementation. Further distributional analysis and possible future chemical study should provide clues to understanding not only Lowther Island's biohermal history, but ancient early diagenesis in general. The Lowther Island reefs are of regional interest, the Lower Devonian being poorly represented in North America.

Geology: Paleontology, Tanquary Fiord  
Investigator: P.H. von Bitter, Royal Ontario Museum

Four stratigraphic sections of Pennsylvanian and Permian strata were sampled specifically for conodonts.

Two sections of the Canyon Fiord and the Belcher Channel Formations in the MacDonald River Valley and at the Omega Lakes were measured and sampled along with two sections in Yelverton Pass. The Belcher Channel Formation section, approximately 23 km northwest of the head of Tanquary Fiord was sampled in detail. The second, a 700 m  $\pm$  section of map unit Cpc approximately 60 km northwest of the head of Tanquary Fiord was incompletely measured and sampled.

Approximately 100 samples of marine carbonate, each weighing 4-5 kg were collected; some Pennsylvanian conodonts have already been recovered and examined.

Geology: Paleontology, Arctic Islands  
Investigator: R.M. West, Milwaukee Public Museum

The season had three objectives: to extend the vertebrate-producing areas of the Eureka Sound Formation to islands other than Ellesmere; to determine the relationships of plant-producing Eureka Sound strata at Stenkl Fiord to the better understood beds near Bay Fiord, both on Ellesmere Island; and to obtain additional postcranial materials of a Miocene lagoon first found on Devon Island in 1979.

Thick sandstone and mud deposits of fluvial origin on western Bylot Island contain marine vertebrates and invertebrates.

The Eureka Sound Formation is extensively exposed in the vicinity of Mallock Dome on Ellef Ringness Island. It is only sparsely fossiliferous; only a few plant fossils were collected. The Eureka Sound Formation on northern Banks Island, also mapped as fluvial, was found to be in part marine and in part not Eureka Sound. Large exposures to the west of Nangmagvik should be regarded as Beaufort Formation; the Beaufort index fossil *Picea banksi* confirms this conclusion.

Fossil vertebrates were recovered at Stenkl Fiord. Large amounts of lagoon material were recovered on Devon Island including six more skulls, a rhinoceros limb bone and the skull of a shrew.

Geology: Periglacial Features,  
Resolute, N.W.T.  
Investigator: A.L. Washburn, Univer-  
sity of Washington

Detailed mapping of the experimental sites continued, establishing additional instrumentation was established and soil specimens taken. Other work was also carried out, such as studies of palsalike features, including acquisition of a 1.2 m peat core, which is being radiocarbon dated and studied for pollen; and the excavation of a number of patterned-ground features. Shell collections from various altitudes up to 205 m which will be identified and carbon dated. The site where wood was collected in 1981 was revisited and more wood was found. Radiocarbon dating has indicated that the wood is more than 50 000 years old. Shell-bearing glacial deposits were found in the Mechem Valley.

Geology: Phosphates,  
Richardson Mountains  
Investigator: H.G. Ansell, Energy,  
Mines & Resources

An unique assemblage of rare and well-crystallized minerals occurs within an extensive phosphatic-sideritic iron formation in the northern Yukon. Suites of these minerals, most of which are uncommon phosphates, were collected in 1978 and 1979 for purposes of preservation, study and exchange. This work was continued for a brief period in 1982. A good selection of mineral specimens was collected and, subsequently, several mineral species not previously known from the locality were identified. As well, samples of the host formation were selectively collected and are being analysed in order to study the relationship between the epigenetic mineralization and host rock geochemistry.

Geology: Precambrian, Eastern  
Devon Island  
Investigator: T. Frisch, Energy,  
Mines & Resources,  
Geological Survey of  
Canada

This work concluded the field component of a major Geological Survey of Canada project on the crystalline basement of southeastern Ellesmere Island, Devon Island and Cobourg Island, the last large area of the Canadian Shield to be mapped on a reconnaissance basis. The main objective of the 1982 work was coverage of the nunatuk terrain of the Devon Ice Cap. Field observations confirmed the easterly gneissic trends that predominate in the Devon Island basement, as distinct from the northerly grain of the basement on Ellesmere and Cobourg Islands.

After the inland mapping, more work (mainly sampling and checks of problem areas) was done on the coast. Four sites of ivory gull colonies were found on nunatuks. These sites are all considered to be nesting colonies and are the first to be reported from Devon Island.

Geology: Paleontology-Bird  
Fiord Formation,  
Southern Ellesmere  
Island  
Investigator: O. Goodbody,  
University of Alberta

Five weeks were spent extending previous coverage of the sedimentology and paleontology of the Bird Fiord Formation. Detailed data regarding rock type, unit thickness, sedimentary structures and general appearances were recorded. Highly interesting lithological samples and locally abundant coral and brachiopod faunas will be analysed.

Geology: Paleontology-  
Sedimentology, South-  
western Ellesmere  
Island  
Investigator: O.A. Dixon, University  
of Ottawa

Objectives included resolving the stratigraphic nomenclature of a sequence known previously only as "Allen Bay-Read Bay Formations, undivided", and interpreting the paleoenvironmental and tectono-sedimentary history of this complex rock sequence.

Another project is an ongoing systematic study of heliolitid coral faunas, documenting new species and establishing time ranges and environmental distributions of the corals for stratigraphic purposes. The aim was to complete representative collections of these corals through their entire stratigraphic range in the Beaumann Fiord section.

Geology: Quaternary, Prince  
of Wales and King  
William Islands  
Investigator: A.S. Dyke, Energy,  
Mines & Resources

Surficial materials on King William Island and adjacent mainland Keewatin were mapped concentrating on the lithography and sampling and on observations and measurements of emerged iceberg scours. Another survey was conducted of Quaternary stratigraphic sections along Pasley River, Boothia Peninsula. These sections expose two major glaciogenic units, consisting of tills and glaciomarine beds separated by thick marine and fluvial sand and gravel beds. Excellent collections of marine shells and detrital fossil organic material are being analysed for composition, amino acid content, and radiocarbon age. This material is being submitted for dating by isotopic enrichment to determine whether the true age lies between 37 000 and 75 000 years.

Geology: Quaternary, Tuktoyak-  
tuk, N.W.T.  
Investigator: S. Kinoshita, Hokkaido  
University

Using a newly designed electro-mechanical drill, core samples were obtained throughout a massive ice body. The core, about 23 m in length, were investigated for ice crystallography and chemical components such as oxygen isotopes, pH and salinity. Many band-like structures divided by soil layers were observed in the entire length of the cores. Inclination and thickness of each stratum are not uniform. Results strongly suggest that the massive ice body was formed by congelation of water, being supported by the presence of band-like structure, dispersed soils and elongated air bubbles.

Geology: Quaternary  
Geochronology,  
East-central Ellesmere  
Island  
Investigator: W. Blake, Jr., Energy,  
Mines & Resources

Nine ponds frozen to bottom were cored, five of which had been sampled on earlier visits. At two sites, Skraeling Island and Stygge nunatak, significantly longer cores than obtained previously were collected. Conventional coring of lake sediments was conducted at 10 other sites.

Studies of glacial geology, weathering, etc. continued, and new collections of erratic boulders were made. Age determinations indicate that organic sedimentation began about 9 000 years ago.

Geology: Sedimentology,  
Southern Ellesmere  
Island  
Investigator: R.J. Rice, McMaster's  
University

The primary objective of this sedimentology study is to refine or correct the existing interpretation of the depositional sedimentary environment(s) associated with each of the five formations of the Okse Bay Group.

The Strathcona Fiord Formation may range from littoral or shallow neritic to tidal flat. No interpretation is suggested as yet for the Hecla Bay Formation. The preliminary interpretation for the Fram Formation for all localities is that the sediments belong to the meandering end of the fluvial spectrum with the thicker fining upwards cycles representing within channel and proximal overbank deposits and the thinner fining upwards cycles representing more distal overbank deposits.

The suggested preliminary interpretation of the Hell Gate Formation is that, two fluvial styles are represented. The grey-white sandstones with numerous large scour surfaces represent a sandy braided system, and the grey to red sandstones and siltstones displaying fining upwards sequences represent a meandering system.

The Nordstrand Point Formation was not examined.

Geology: Slope Processes,  
Cornwallis, Bathurst  
and Melville Islands  
Investigator: J.A. Heginbottom,  
Energy, Mines &  
Resources

The experimental sites established in 1977 were visited during June and July 1982. A complete survey of all bench marks, measurements and marker pegs was completed, and various incidental observations made and recorded. Excavation of soil pillars at a site on the Bjorne Sandstone, southeast of Sherard Bay, Melville Island, revealed considerable differential movement in the upper layers of the soil. At one site, on a slope of approximately 6°, the movement has been 8.5 cm in five years, whereas on an adjacent 12° slope the differential movement has been 20 cm.

Geology: Stratigraphy, Copper-  
mine, N.W.T.  
Investigator: F.H.A. Campbell,  
Energy, Mines and  
Resources

An examination of the Husky Creek Formation of the underlying Coppermine River Group was undertaken to determine the general sense of orientation of the basin or valley of sediment accumulation during the pause in the eruption of the Copper Creek Formation lavas. Prior to identification of inarticulate brachiopods in the upper part of the Rae Group, the units had all been interpreted as Hadrynian. One of the main purposes of this examination was to confirm the age of the Paleozoic units previously assigned to the Rae as well as to delineate any physical continuity, and thus correlation of various similar sequences in the Coronation Gulf Region.

The redefinition of the Rae Group necessitates a re-examination of the regional correlation of both the late Proterozoic and lower-most Paleozoic of the region.

No new mineral deposits of economic significance were located. It is noteworthy, however, that gold-bearing quartz veins in the Archean basement could have been one of the sources for the basal quartz sands of both the Aphebian Odjick Formation and the Hydrynian Rae Group. Although no placer deposits were noted, the large scale program that would be required to identify possible economic targets was beyond the scope of this investigation.

Geology: Stratigraphy, Northern  
Yukon  
Investigator: M.P. Cecile, Energy,  
Mines & Resources

Several investigators joined logistical facilities in the northern Richardson Mountains to study Quaternary, Jura-Cretaceous, Mississippian and Lower Cretaceous stratigraphy, while near the Wernecke and Ogilvie Mountains Quaternary, Mississippian, Mesozoic, Lower and Middle Paleozoic and Precambrian stratigraphy were investigated.

Geology: Stratigraphy, Northern  
Ellesmere Island  
Investigator: A.F. Embry, Energy,  
Mines & Resources

Stratigraphic studies of Mesozoic strata in the Sawtooth Range and north of Greely Fiord were conducted. This work has clarified the Mesozoic succession in the area and new stratigraphic units have been recognized. Paleomagnetic samples (190 in number) were collected from two Cretaceous flows.

Geology: Stratigraphy, Aklavik  
Range  
Investigator: D.K. Norris, Energy,  
Mines and Resources

A study was carried out and completed on the stratigraphy and structure of Aklavik Range at a scale of 1:50 000. Preliminary results include refinements in the Jurassic and Cretaceous formations, the identification of an important unconformity at the base of the Lower Cretaceous Rat River Formation in the Aklavik Range and the presence of several additional gypsiferous intrusions along the Donna River Fault. Final analysis should include an accurate assessment of the role of the Donna River Fault of the Richardson Fault Array in the structural control of hydrocarbon traps beneath the Mackenzie Delta.

Geology: Stratigraphy, Eastern Axel Heiberg Island  
Investigator: W.M. Schwerdtner, University of Toronto

The horizontal outlines of the anhydrite hoods of the Gibbs Fiord and Three Lakes Diapir have been drastically changed by faulting presumably during the Eurekan Orogeny. Large amounts of NaCl were discovered along the main valley through the Stolz Diapir as rock-salt-rich talus and extensive accumulations of reprecipitated salt in the sediment bed.

The two segments of the Stolz Thrust studied contain many diapirs whose deformed anhydrite hoods are highly gypsified. The evidence includes minor shear zones, asymmetric folds in bedding, etc.

Geology: Stratigraphy, Upper Silurian, Eastern Prince of Wales Island  
Investigator: P. Mortensen, University of Alberta

Three sections encompassing the Upper Silurian strata were measured, and both lithological and paleontological samples were collected. Prescott Island was traversed and mapped in detail in an attempt to further delineate the structure and stratigraphy.

Geology: Stratigraphy, Upper Silurian, Brodeur Peninsula, Northwest Baffin Island  
Investigator: F. Nentwich, University of Alberta

Four sections of the studied area were measured. Detailed overlapping photos of the south shore of Port Bowen have helped define lateral changes in the strata, especially zones of brecciation. All four sections are correlatable based on a datum placed at the base of a thick stratified breccia.

Geology: Surficial, Western Victoria Island  
Investigator: J.S. Vincent, Energy, Mines & Resources

This project will provide surficial geology maps and reports that will shed light on the glacial and non-glacial history of the area and on the distribution, provenance and sequence of Quaternary sediments. The work will provide information that may be useful in engineering and land use planning. Details of the latest glacial events have been correlated with Melville Island to the north, while direct correlation with Banks Island stratigraphy to the west has identified three ages of glacial advances. Deposits of probable interglacial and interstadial age are present. The potential for surfaces of different ages has important implications for ground ice and botanical studies, and final results of these studies may provide critical discriminating data. Botanical studies to date have shown important zonal, altitudinal and local distribution mainly relating to temperature, wind protection and drainage. Ground ice studies indicate the importance of understanding the genesis of these features and their association with unstable landscapes.

Geology: Surficial Marine, Southern Beaufort Sea  
Investigator: S.M. Blasco, Energy, Mines & Resources

The project focuses on delineating the late Quaternary events and regional stratigraphic framework of the Beaufort Continental Shelf in relation to the engineering stability of the seabed. Investigations included the acquisition of high resolution acoustic profiles and sediment cores to evaluate:

- the nature of mechanisms of mass movements of the shelf edge and upper slope;
- the thickness of Holocene sediments in Mackenzie Trough;
- the nature of subsea mud volcanoes; and
- the relationship of shelf sediments to shallow acoustic permafrost and environments of deposition.

Joint field programs with Beaufort Sea Operators involved:

- the deployment of in-situ sediment dynamics instrumentation to investigate

sediment flux across the seabed on the toe of the abandoned artificial island ISSERK:

- the acquisition of high resolution acoustic profiles to both delineate shelf stratigraphy in poorly known areas, and assess the recurrence rates and maximum incision depth of recent ice scouring; and
- the sampling of geotechnical boreholes for sedimentological, biostratigraphic and paleoenvironmental studies of late Pleistocene and Holocene sediments on the shelf.

Glaciology: Paleoclimatology, Mass Balance, Queen Elizabeth Islands  
Investigator: R.M. Koerner, Energy, Mines & Resources

Bulk snow samples for pollen analysis were collected from the tops of 10 ice caps in the Queen Elizabeth Islands. Three other sets of snow samples were collected by other groups from the Arctic Ocean.

Borehole diameter and tilt were measured on the two Agassiz ice cap (N. Ellesmere) holes and down borehole TV records and photographs taken. Ice cap mass balance was measured on Devon, Meighen, Melville and Agassiz ice caps.

Geophysics: Electromagnetic Sounding, Tuktoyaktuk, N.W.T.  
Investigator: A. Sinha, Energy, Mines & Resources

Field studies were carried out over several sites in the Mackenzie Delta, to test two deep electromagnetic sounding systems to evaluate their usefulness for detecting permafrost boundaries (particularly the bottom boundary) and other conductive structures from the surface at depths to 600 m. Two systems were used: the Maxi-Probe multi-frequency deep electromagnetic sounding, and the Geonics EM-37 transient EM system.

The Maxi-Probe results were more promising since, in most cases, the depths determined were within 5% of the values obtained by thermal surveys. Also, the Maxi-Probe survey detected several additional conductive horizons within the

permafrost layers. The results with the EM-37 were somewhat less satisfactory; the conductors detected were almost always at depths shallower than the bottom of permafrost.

Geophysics: Magnetics, Eureka-Fort Conger  
Investigator: E. Dawson, Energy, Mines & Resources

As part of the ongoing program of the repeat determination of the earth's magnetic field at various stations on a regular basis to determine changes, three other sites, Fort Rae, Fort Conger and Clearwater Fiord, occupied during the International Polar Year of 1882, were visited and measured. Magnetic gradients about the sites and secular variation were measured for comparison with data observed 100 years earlier. Gross changes in the magnetic field at the I.P.Y. stations over the past century are significant.

Geophysics: Permafrost, Beaufort Sea and Victoria Harbour  
Investigator: J.A. Hunter, Energy, Mines & Resources

Three projects were conducted by the seismic section in Northern Canada. Thermometers were installed using a hydraulic water-jet drilling method at eight locations. The most interesting result of the isothermal section produced from the temperature readings was the evidence of near-shore seasonal frost.

The occurrence and distribution of sub-seabottom permafrost on the Beaufort Shelf is of interest. Several lines of single-channel data and of multi-channel seismic data were obtained between offshore well sites. A deep two refraction experiment was conducted in an effort to obtain accurate velocities for the sediments above the high-velocity "acoustic permafrost".

The application of geophysical techniques to Arctic archeological sites was investigated. It is apparent that some geophysical techniques currently used in marine geology and in mining exploration can be adapted for use in Arctic archaeology. Magnetic gradiometer measurements can be an extremely useful complementary tool. Shallow E.M. methods can be utilized at maximum sensitivity to detect metal artifacts. An under-ice rotary sidescan sonar was developed.

Geophysics: Radiometry, Beaufort Sea  
Investigator: J.P. Welsh, University of Washington

An investigation was undertaken to determine the extent to which ground-based studies of microwave emission from sea ice can be used to improve estimates of ice concentration and ice type distribution derived from satellite imagery. A set of three microwave radiometers was tested. The radiometer measurements consisted of brightness temperature versus frequency and polarization.

A development of parameters relating the size and shape of brine pockets and bubble density to more readily measurable state variables such as temperature, density, salinity and initial growth rate was verified from data at visible and near infrared wavelengths.

Hydrography: Prince of Wales Strait  
Investigator: J.R. MacDougall, Fisheries & Oceans

The entire strait was covered by a total of 12 877 spot depths collected on a 1 000 metre grid and 287 gravity observations obtained on a six kilometre grid. Motorola Mini-Ranger was used for positioning.

Hydrology: Mackenzie Delta  
Investigator: J.C. Anderson, Environment Canada

During the construction of the Dempster Highway, difficulties such as washouts and severe icings were encountered because of a lack of hydrologic information for small and medium-sized drainage basins. In an effort to avoid such problems on the proposed Inuvik-Tuktoyaktuk Highway, data on the following variables has been collected and analysed at a variety of basins in the region:

- culvert ice accumulation thickness;
- late winter snowpack water equivalent;
- field season precipitation;
- air temperature; and
- discharge

A survey of culvert icing was conducted in the taiga zone, and accumulations were found to be above normal in intensity. Monitoring of variables continued until September, while continuation of recording water levels at five sites into the freeze-up period was maintained.

Hydrology: Mackenzie Delta  
Investigator: S.C. Bigras, Environment Canada

An investigation of water quality characteristics was initiated at ten study areas throughout the Delta. Ice core/water samples of a variety of lakes and channels were taken prior to (April-May) and after breakup (June) and later on at low water levels in September. This information is intended to provide some indication of the effect spring flooding has on the lake system, i.e., to determine hydrologic regimes.

Hydrology: Resolute, Eureka and Mould Bay  
Investigator: M.K. Wood, McMaster University

For 9 months each year, snowfall is the major form of precipitation in the Canadian High Arctic. Without vegetation, snowdrift is controlled by the local terrain. By establishing the snow characteristics for different terrain types, total basin snow storage can be obtained by weighting the snow cover of areas for various terrain units in the basin. Such a method was successfully employed to compute total winter snowfall in the drainage basins near Resolute, Eureka and Mould Bay. Results confirm that the Arctic weather stations consistently under-estimate basin snow storage. It is concluded that the annual precipitation in the High Arctic is generally greater than reported.

Hydrography: Beaufort Sea  
Investigator: J.A. Vosburgh, Fisheries and Oceans

1982 marked the second season of surveying a deep draught shipping corridor across the Beaufort Shelf. The corridors as originally designed (16 kilometres wide by 288 kilometres long) is now 87% complete. Two pingo-like features were found whose depths infringe upon the design criteria of 20 metres and a further 13 PLF's lie within a 5 metre safety margin.

Hydrography: Tides, Barrow and Prince of Wales Straits  
Investigator: D. St. Jacques, Fisheries & Oceans

The objectives of the program are to assist navigation by improving the tidal predictions in volume 4 of the Canadian Tide and Current Tables and to increase the accuracy of charts by providing a better definition of chart datum. A total of 12 submersible tide gauges were deployed and recovered in Prince of Wales Strait, McClure Strait and in Barrow Strait.

Physics: Ice-Stress Analysis, Yelverton Inlet, Ellesmere Island  
Investigator: G.U.B. Cochran, Explorer's Club

The objective was to examine the small ice shelf SW of Mitchell Point and to conduct stress analysis studies on sea and glacier ice abutting the shelf. Monitoring of ice strain by means of embedded electrical resistance gauges was carried out at two locations, together with tests of a technique for determination of residual strain by the hole drilling method. The work was successful from a technical standpoint, although results in terms of measured variations in ice strains were negative because of the static nature of the thick, second-year ice. Furthermore, no recently frozen leads were available for tests in thinner ice.

Physics: Sea Ice, Resolute Area  
Investigator: G. Crocker, McGill University

This study was concerned with the physical properties of the snowcover on Resolute Passage during the period October to January and their influence on heat transfer from the ocean to the atmosphere. Extremely cold weather and general lack of strong winds resulted in the entire passage virtually freezing up at the same time, which made the study site chosen an excellent representative sample of the ice and snow conditions in the area. The salinity and, therefore, the liquid content of the ice surface and snowcover are extremely high, especially during the thin ice period, when salinities as high as

120 ppt. were measured on the surface of the ice. Even in mid-winter the salinity of the bottom cm of the snowpack averaged about 45 ppt. The high liquid content that results from these large quantities of salt is postulated to have a significant influence on the thermal properties of the snow and to have major implications in ice growth and energy flux. The exact relationship between these parameters remains to be determined. However, the application of this data to existing theoretical models will provide indications of the magnitude of the energy transfer through the snow and the applicability of existing empirical formulae to this unique medium.

Physics: Sea Ice, Adams Island, Lancaster Sound  
Investigator: R. Frederking, National Research Council

A project was initiated to observe and measure ice interaction processes and environmental driving forces around Adams Island, a small island simulating a man-made offshore structure. Initial estimates of the associated ice pressures were made. Theodolite measurements of horizontal movements of the ice cover relative to the island were carried out and related to environmental driving forces. The size and thickness of a number of multi-year floes were surveyed.

Physics: Radio Sounding of Magnetosphere, Resolute, N.W.T.  
Investigator: J.W. MacDougall, University of Western Ontario

Ionospheric convection measurements at Resolute formed part of a multi-station study involving Inuvik, Cape Parry, Sachs Harbour, Cambridge Bay and Fort Franklin. The primary objective was to measure the ionospheric convection pattern over the 'polar cap'. Electric fields in the polar cap region are directly caused by interaction between the earth's magnetosphere and the flow of particles, known as the polar wind, from the sun.

The radio waves from polar communication satellites are diffracted by ionospheric irregularities. By using a small array of antennas on the ground to measure changes in the diffraction pattern, one can calculate the velocity of the ionospheric convection. Convection results were recorded for 400 hours.

Physics: VHF/UHF Propagation, Lancaster, Viscount Melville Sounds  
Investigator: J.I. Strickland, Department of Communication

Seven experimental VHF/UHF radio links were installed, extending from Resolute to the vicinity of Rea Point. Preliminary assessment of the data indicates that propagation conditions in this area are so different from those in southern latitudes that conventional prediction methods are not usable, in agreement with the hypothesis on which the experiment is based. Revised prediction methods are anticipated.

Oceanography: Barrow Strait  
Investigator: D.J. Brooks, Fisheries & Oceans

The Barrow Strait project, a long-term monitoring of ocean properties and transport, is being carried out to partially fill an information gap and is an activity associated with the Working Group on Northwest Passage Oceanography (SCAO, C.C.O.). The general aim of the field work is to collect information on the magnitude of short and long-term variations in the physical, chemical and biological properties of the water in a section of the Northwest Passage. The study area includes the entrances to the contiguous waters of McDougall Sound, Peel Sound and the Wellington Channel.

The field work is a combination of regional surveys of water structure and properties, intended to delimit spatial variations and, at selected sites, of repeated/continuous measurements to identify variability in water structure, chemical and biological properties and water movements. The surface mixed

layer in 1982 was 20 to 30 metres deeper than it was in 1981. Also, maximum current usually associated with the bottom of the surface mixed layer was observed in 1982, indicating that the vertical current distribution correlates closely with the density structure. The eastward flow along the south shore of Barrow Strait was again observed and caused upwelling. Zooplankton species composition is different for the various water masses in the area. The onset of spring production of ice biota was observed in March, flourishing in late April.

Oceanography: Northwest Passage  
Investigator: R.A. Lake and D. Brooks, Fisheries & Oceans

During the period of March-June, 1982, a total of 156 conductivity-temperature profiles were taken within the Northwest Passage and adjacent to it. Twenty-eight surface layer current meters and five water level gauges were deployed and successfully recovered after operating during the March-June period. Also, two current meter arrays were deployed in M'Clure Strait, and five water level gauges were deployed in Prince of Wales Strait. These were left to operate for a period of one year. Data on sea ice thickness and water chemistry were also collected.

Oceanography: Sea Ice Classification by Radar, Navy Board Inlet  
Investigator: E. Lewis, Fisheries and Oceans

A field experiment was conducted at a site near the entrance to Navy Board Inlet to evaluate the effect of various radar parameters on classifying sea ice features. The program investigated radars operating at X and S Bands, as well as effects of various pulse lengths, antenna beam widths, elevation above sea level and changes in polarization. Data were recorded photographically from the Radar Plan Position Indicator on an oscilloscope and on a wide-band video recorder. The data collected were extensively ground-truthed by detailed surface observations and aerial photography.

Oil Spill: Cape Hatt, Baffin Island  
Investigator: P. Blackall, Environment Canada

The primary study in 1982 was an in situ assessment of the effects of oil and dispersed oil on the amphipods and algae inhabiting the under-ice surface. A secondary study was carried out to assess the effects and effectiveness of a new oil-gelling agent. In addition to the postspill monitoring, a number of small shoreline oil releases took place as part of the continuing shoreline countermeasures program. Also, a number of flow-through bioassay studies were designed to provide additional information on the response of selected local benthic organisms to dispersed oil.

Oil Spill Monitoring: Griper Bay, N.W.T.  
Investigator: F.S. Abbott, Environment Canada

A small quantity of oil had been placed under multi-year ice in the Bay in 1978. The site was overflowed several times during 1978 and visited in September 1979, at which time it was estimated that no more than 10% of the oil remained in the ice sheet. The site was visited in August 1982, and no oil was found.

P.C.S.P. support was also provided for:

- aerial surveys in a continuing program to monitor the effects of industrial activities of the distribution and abundance of seals in the eastern Beaufort Sea;
- land use inspections on Axel Heiberg, Ellesmere, Bathurst and Melville Islands at sites utilized for both industrial operations and Government research projects;
- surveying deposits of carving stone in the Mary River-Nuluujack Mountain area;
- surveillance and monitoring of the beluga whale harvest in eastern Beaufort Sea;
- an investigation of dead beached whales in the Mackenzie Delta to determine cause of death and age of the mammal;
- a reconnaissance survey to collect faecal samples and to carry out a complete survey of Banks Island for caribou and muskoxen;
- the collection of meteorological data twice daily from all field parties;
- a review of requirements for National Parks in the Arctic;
- a study of muskrat habitat in the Mackenzie Delta;
- an archaeological survey near Fort Conger;
- an investigation of sea ice physics signatures for the future design of a satellite; and
- geothermal studies in the Sverdrup Basin and Mackenzie Delta.

#### **Plans for 1983-84**

The 1983 Arctic field season will see more than 167 scientific parties conducting their individual and characteristic investigations. Operations CESAR (Canadian Expedition to Survey the Alpha Ridge) and the combined hydrographic/gravity survey north of Ellesmere Island will be the major 1983 survey activities. The oceanographic investigations of the Northwest Passage will continue. The number of university parties applying for logistical assistance is declining. However, this decline is offset by an increase in the number of Government agencies gathering base line data.

## Canada Centre for Mineral and Energy Technology

### Responsibilities

CANMET does extensive research in mining, mineral processing, materials and energy technology. Some research into materials for oil and gas pipelines, Arctic vessels and offshore structures relate directly to federal activities in the North.

### Review 1982-1983

Research on materials for linepipe has concentrated on the effect of titanium, molybdenum and niobium on the hot-working of linepipe steels, on the mechanical properties of linepipe steels containing chromium and vanadium and on drop-weight tear testing of linepipe steels to assess their dynamic toughness under cold conditions. The effects of mechanical stress on the magnetic properties of pipeline steels are being studied as the basis of a possible system for monitoring defects. The properties of welds in large diameter linepipe fittings are being assessed after normalization and stress relief.

The cause of weaknesses in heavy-section bronze ice-breaker propellers is being thoroughly studied with the hope that a remedy can be found through suitable heat-treatment. Work continues on evaluating and improving ship-plate for Arctic use and on assessing welding techniques to minimize weld-line corrosion.

Research on materials for offshore structures in the Beaufort Sea and off the East Coast has started with a review of steels used to construct off-shore structures, a survey of projected future plate steel requirements and consideration of suitable techniques to assess fracture toughness of extremely thick steel sections.

A contract to study "The Behaviour of Frozen Backfill in Underground Mines" has been let to Nantar Engineering Limited, Kingston, Ontario. The objective is to determine the physical and mechanical properties of frozen tailings used as backfill material in underground mines operating in regions where permafrost may be encountered. The contract will run from October 1982 to August 1983.

### Plans for 1983-1984

Future work on linepipe will include assessing on-line accelerated cooling to improve mechanical properties studying the effects of reduced reheat temperatures on the processing of linepipe, rationalizing inspection techniques to take into account the effects of mechanical damage and developing advanced welding techniques and consumables (i.e. welding rod) for grade 483 pipe.

The study to determine the cause and remedies for alloy weaknesses in bronze ice-breaker propellers should be completed. Work begun in 1981 on various aspects of Arctic ship plate will continue.

CANMET has launched a major effort to study materials for offshore structures as part of the National Energy Program. In 1983-84, background studies will be completed and experimental studies will begin on the corrosion-fatigue of welded joints, the fracture resistance of thick plate, techniques for welding thick plate and the development of plate steels for offshore structures. A new corrosion fatigue laboratory, with servo-hydraulic test equipment for carrying out fatigue tests under simulated marine conditions, should be completed early in 1983-84.

## Environmental Protection Services

### Responsibilities

EPS ensures that the federal government's environmental protection regulations are enforced. The Service is concerned with controlling air and water pollution, managing the disposal of waste, assessing and controlling the environmental impact of pollutants, and handling environmental emergencies. This Service provides the departmental liaison with industry and provincial environmental protection agencies and operates through district offices in Whitehorse and Yellowknife.

### Air Pollution Control Directorate

### Responsibilities

Under the terms of the Clean Air Act, the Directorate monitors and controls air pollution in the two Territories.

### Review 1982-83

In the Yukon Territory, sampling of Whitehorse air for carbon monoxide, oxides of nitrogen, and total suspended particulate matter (solids) continued as part of the National Air Pollution Surveillance system. Levels of carbon monoxide exceeded acceptable levels on certain days in winter.

Monitoring of unleaded gasoline stocks at wholesalers and retailers revealed occasional severe contamination because of poor handling methods by delivery agents.

In Riverdale, a suburb of Whitehorse, an extended program of air sampling was carried out to measure the presence of four air pollutants. As well, the program included micro-climate observations. Preliminary results revealed that pollution levels had increased over last year's. Observations confirmed that more houses are using woodburning stoves and fireplaces in the suburb.

The expanded program was assisted by special funding from Energy, Mines and Resources Canada. A report on 1981-82 sampling was published.

In the N.W.T., three high volume samplers operated continuously: one in Yellowknife and two in Norman Wells. The dust fall sampling program was discontinued in 1982-83.

Clean Air Act inspections were carried out at the Con Mine arsenic trioxide plant and at the Giant Yellowknife Mine.

The monitoring program for compliance with leaded and non-leaded fuel regulations continued. Forty gasoline sources were sampled. Three stations were found to be promoting the practice of misfueling. They had fitted leaded gas pumps with small-diameter nozzles designed to dispense unleaded gas.

#### **Plans for 1983-84**

The Directorate intends to complete a report on all 1981 to 1983 data on Riverdale wood smoke so that a human health assessment can be made before the onset of the 1983-84 heating season.

Because of the contamination noted at unleaded gasoline pumps last year, the Directorate will increase its monitoring of unleaded gasoline stocks during 1983-84.

EPS will assess air emissions and control systems at new and existing mines in the N.W.T., as required. Routine high volume air sampling and sampling of fuel sources will continue in the N.W.T.

#### **Water Pollution Control Directorate**

##### **Responsibilities**

Water Pollution Control (along with the Department of Indian Affairs and Northern Development and the two Territorial water boards) is responsible for developing and implementing adequate water pollution control programs in the North, particularly for the mining and petroleum industries. EPS implements the provisions of the Ocean Dumping Control Act, and other water pollution abatement programs under the authority of Sect. 33 of the Fisheries Act. It also stimulates the development and application of water pollution control techniques as they relate to the North.

#### **Review 1982-83**

Yukon Territory Water Board matters continued to occupy a large part of the Branch's effort. The Branch spent a significant amount of time reviewing and advising on applications to the Board. The Directorate appeared at two public hearings on placer mining licences. Work on the Municipal Technical Committee was completed with the presentation of draft municipal guidelines to the Board in December and at a public review in January. Specialists in other divisions of EPS helped the Branch to prepare its submissions. EPS Yukon analysed the effluents from the Whitehorse sewage system to assist the City in complying with a Water Board request that it improve the City's sewage treatment.

Lab work was completed with 70-day oxidation tests of mine tailings from five mines. Some of the samples oxidized very rapidly, confirming results noted in field studies.

EPS Yukon carried out field investigations at two Yukon placer streams during the 1982 field season. A field investigation of water chemistry and benthic invertebrate parameters was undertaken at King and Stokes Points on the Yukon Beaufort Sea Coast.

EPS continued to participate in the Yukon River Basin Study planning program by serving on the Water Quality Working Group.

EPS Yukon participated at the policy and technical levels on interdepartmental committees and working groups. These consisted of people from the Departments of the Environment, Indian Affairs and Northern Development and Fisheries and Oceans who worked together to develop a set of guidelines covering placer mining in Yukon.

In conjunction with the Department of Fisheries and Oceans, EPS Yukon prepared a report on the costs of meeting proposed new criteria for (suspended) solids in placer mining effluents. These criteria will be included in the public information package on the new guidelines.

In the N.W.T., a survey was conducted at Prairie Creek in the Mackenzie Mountains to evaluate procedures for monitoring the condition of mountain streams. A continuing environmental

assessment of Yellowknife Bay, Great Slave Lake, was carried out during the winter as a part of the evaluation of the new Giant Yellowknife Mine waste treatment system. The study also assessed the effects of contaminated sediments on water quality.

A study to identify problems associated with uranium tailings at Port Radium was carried out, and a final report is expected in July 1983.

A study on the feasibility of using sludge as a commercial fertilizer was carried out and a final report was prepared. Phase I of a study of active and abandoned landfill sites in the N.W.T. was completed. EPSN.W.T. participated in a joint study with the EPS Wastewater Technology Centre in Burlington and with the Giant Yellowknife Mine to evaluate the mine's new alkaline chlorination treatment plant.

A Beaufort Sea shorebase monitoring program was carried out in cooperation with Dome, Gulf, and Esso in 1982-83. Other marine activities included a sediment geochemical survey along the Tuktoyaktuk Peninsula, assisting EPS Yukon with marine monitoring at Stokes Point and King Point on the Yukon coast, preparing a report on the environmental assessment of polyurethane foam block in high Arctic drilling operations and coordinating two sections of the DOE review of the Beaufort Sea Environmental Impact Statement (EIS). EPS also carried out a winter sampling program at Tuktoyaktuk Harbour to evaluate suitable techniques for carrying out winter field work under severe Beaufort conditions; a study on the bioaccumulation of contaminants from sediments, and coordination of a study on the bioaccumulation of contaminants from sediments.

The Arctic Regional Ocean Dumping Advisory Committee (Arctic RODAC) met three times. EPS/N.W.T. consulted with members of communities affected by ocean dumping applications and directed a study on the feasibility of designating ocean dumpsites in the Canada Beaufort Sea. Panarctic Oils Ltd. was charged and found guilty in the Territorial Court of several offences under the Ocean Dumping Control Act.

Four investigations were conducted under Section 33 of the Fisheries Act. One "Inspector's Direction" was issued as a result of an oilspill.

An annual compliance test was conducted at the Esso refinery in Norman Wells, and a report was prepared.

EPS presented interventions and represented the Department at several N.W.T. Water Board public hearings. EPS/N.W.T. provided technical assistance to the Water Board in writing the terms for 11 water licences under the Northern Inland Waters Act.

#### **Plans for 1983-84**

EPS will continue its involvement with water pollution problems through monitoring and providing advice to other agencies. Research to determine the best way to treat effluents from Whitehorse and other communities will continue. The second year of the mine tailings study will include detailed mapping of oxidized areas and recommendations for intercepting and treating heavy metals in surface waters. EPS Yukon intends to continue monitoring Yukon placer streams and plans an environmental audit at one base metal mine during 1983-84. Plans are underway to undertake further biological and chemical survey at selected locations on Yukon's north slope and the Beaufort sea coast.

EPS will remain involved in the Yukon River Basin Study and in reviewing and implementing placer mining guidelines.

In the N.W.T. studies will continue on environmental quality. A sewage study will be conducted on the Fiddler lakeagoon system in Yellowknife to monitor water quality in stages throughout the system. Work will continue on identifying problems with uranium tailings. The Portadium mine site will be studied further, and another study of the abandoned rayrock minesite will begin.

The Marine Group plans to do a shorebase monitoring program, develop a methods manual, and complete Phase II of the ocean dumpsite designation. Other projects planned will depend upon external funding.

Phase II of the active and abandoned landfill study will take place in 1983-84, and efforts will continue to develop a presentation on oilspills and a clean-up course for northern communities.

EPS will continue to administer the Ocean Dumping Control Act with advice from the Arctic Regional Ocean Dumping Advisory Committee. By continuing as a member of the Technical Advisory Committee to the N.W.T. Water Board, EPS will provide technical advice on licences issued under the Northern Inland Waters Act.

#### **Waste Management**

##### **Responsibilities**

EPS ensures that federal government activities incorporate adequate waste management procedures. New techniques for managing waste are being developed, and information on them is being distributed.

##### **Review 1982-83**

EPS Yukon branch initiated interdepartmental meetings on waste management between the federal government and the Government of Yukon. It participated in task forces to both review problems and suggest alternative policies for managing waste and transporting dangerous goods.

#### **Plans for 1983-84**

As part of the national Phase I inventory of sites on federal lands, EPS will complete its inventory and mapping of active and abandoned solid waste disposal areas during the 1983 summer. Discussions with the Yukon Government will continue in follow-up to a consultant's recommendations. Reconnaissance soils sampling planned for last year but not completed will be carried out.

#### **Contaminants Control**

##### **Review 1982-83**

EPS Yukon helped to remove three large transformers from an abandoned dredge in the Klondike area. These transformers contained PCB and were becoming an environmental hazard. Other equipment in the Yukon containing PCB has become surplus, and EPS is urging the owners to dispose of these compounds safely. EPS also chaired an intergovernmental advisory committee on pesticide programs in the Yukon. Finally, EPS initiated and supervised a consultant's study of "Mercury Usage in Placer Mining Operations in Yukon Territory and Northwestern British Columbia".

#### **Plans for 1983-84**

An important objective will be the safe removal and disposal of remaining PCBs in Yukon at two closed mines.

EPS will continue to chair the intergovernmental advisory committee on pesticide programs in Yukon.

#### **Federal Activities**

##### **Review 1982-83**

EPS/Yukon continued to participate in the Land Use Advisory Committee (LUAC) of DIAND and provided support for the DOE representative on the Regional Environmental Review Committee (RERC). It also provided input to EIS's review of Hydrocarbon Development in the Beaufort Sea.

EPS/Yukon participated in the EARP Panel review of submissions by Foothills Pipelines Ltd. for the Alaska Highway Gas Pipeline and attended June hearings in Whitehorse.

EPS/N.W.T. continued to provide support to the Arctic Waters Advisory Committee, advising DIAND on the development of environmental operating conditions for offshore oil and gas operations.

Sub-district offices were opened at both Inuvik and Frobisher Bay. Each was staffed through two-week rotating assignments from the Yellowknife office.

#### **Plans for 1983-84**

EPS will continue its role on LUAC and in support of RERC and DIAND's new Land Use Planning initiatives. It is anticipated there will be more activity related to the Beaufort Sea EIS when the proponents address deficiencies recently identified by the Panel.

Both sub-district offices will be staffed on a full time basis to provide service to the Eastern Arctic and to the Beaufort Sea area. EPS/N.W.T. will continue to provide support to the Arctic Waters Advisory Committee.

#### *Environmental Emergencies*

##### **Review 1982-83**

EPS Yukon received 17 reports of pollution incidents involving spills of oil or other hazardous materials. This number reflects a drop compared to figures for the last several years, and it correlates with reduced truck traffic as a result of a severe slowdown in the mining industry.

An information under section 33 of the Fisheries Act was laid against Placer Development Limited on September 16, 1982 concerning a loss of more than 45 000 litres of fuel from the Company's Howard's Pass exploration property.

A major training program for government employees involved in environmental emergencies was undertaken. EPS/Yukon worked with a professional training consultant to develop the three-day course, which was attended by representatives from DIAND, NHW, DFO, EPS, RCMP and Parks Canada. The training has already had beneficial results by improving liaison in the spill surveillance and reporting network for the Territory.

Contingency plan development continued to be an important aspect of EPS/Yukon's work. The Yukon Disaster Committee Contingency plan to deal with oil and hazardous chemical spills was updated, and advice was provided to industries to help them develop their own site-specific plans.

EPS/Yukon's prevention activities included inspecting bulk petroleum storage sites, power generation facilities and the multi-product pipeline between Whitehorse and Skagway, Alaska. Several plans for improving petroleum bulk storage facilities were reviewed on behalf of the YTG Fire Marshall's office.

In 1982-83, the N.W.T. reported 97 spills. Major ones investigated by EPS included spills at Camp Farewell, Tuk Harbour, Port Radium, Norman Wells, Fort Franklin, Fort Good Hope, Frobisher Bay, Inuvik, and along various winter roads.

Charges under Section 33 of the Fisheries Act were laid as a result of an oilspill in Tuktoyaktuk Harbour.

##### **Plans for 1983-84**

EPS/Yukon will continue to promote contingency planning for specific industrial operators and update the Yukon Disaster Committee's plan. Key prevention activities will include inspecting existing facilities and reviewing plans and specifications for new ones used to store either chemicals or petroleum products.

The main activities relating to spills will involve monitoring clean-ups and providing support to the Yukon Disaster Committee by maintaining the alerting / reporting system for spills.

EPS/N.W.T. will continue to monitor emergencies reported through the N.W.T. Spill-reporting network, and investigations will be carried out where required.

##### **Corporate Affairs**

To develop a corporate focus for DOE in Yukon, the Department has created the position of Director of Corporate Affairs. DOE information centre has been established to provide interest groups and the general public with access to departmental literature and to provide a referral service for other DOE services. A Yukon-specific DOE Brochure to be better explain the role of DOE and access to services is being prepared.

#### **Northern Forest Research Centre**

##### **Review 1982-83**

A study of the effect of variations in climate on the productivity of forests continued. The Centre contributed to reviewing development proposals and assessing the environmental impact of projects such as the Beaufort Sea Development, Borealis Mine, Liard Highway, and the Peace River Hydroelectric Development. Base-line studies in proposed development areas in Bylot Island and Eclipse Sound have been completed. A major upgrading of the Large-scale Photo Sampling System was undertaken. This project was funded by the Department of Indian and Northern Affairs. Forest insect and disease surveys were conducted from Fort Smith to Fort Simpson and along the Liard and South Nahanni rivers. Data on the forest industry in the N.W.T. was analysed for a report. The Centre also represented the CFS on the Fire Management Program Committee, helping to develop forest management policies and programs in the N.W.T.

##### **Plans for 1983-84**

The Centre will continue to assess the effect of climate variations in the boreal forest and adjacent zones. It will also participate in the federal environmental assessment process. The value of the Large-scale Photo Sampling System will be assessed for carrying out regeneration surveys in co-operation with the Yukon Forest Service. Assistance with N.W.T. forest management inventories is also planned.

Surveys of forest insects and diseases will be conducted after consultation with DIAND. An information report will be prepared, entitled "Fire Behavior of the Black Spruce-Lichen Woodland Fuel Complex: the Porter Lake, N.W.T., Project".

NFRC continues to serve on the N.W.T. Fire Management Program Committee. Technical advice and service will be provided regularly. A report will be prepared on the capacity, production, and demand for forest products in the N.W.T.

## *Canadian Forestry Service (CFS)*

The Forestry Statistics and Systems Branch, Chalk River, Ontario and the Pacific Forest Research Centre, Victoria, B.C., are two organizations within Environment Canada's CFS. Both are co-operating with the Renewable Resources Branch Northern Affairs Program DIAND, Whitehorse, Yukon territory in carrying out a forest inventory of the Territory. The forest cover will be classified and mapped on 42 map sheets 1:250 000 scale to cover a total area of about 480 000 km<sup>2</sup>. The inventory will provide a much needed overview of Yukon forest resources. Although not intended to provide sufficient detail to permit site-specific decision making, it will be useful for broad planning purposes. The project is scheduled for completion in 1985.

The Canadian Forestry Service through the ENFOR (Energy from the Forest) program will be collecting data in the Northwest and Yukon Territories as part of the 1984 National Biomass Inventory. The Forestry Statistics and Systems Branch is the co-ordinating agency. The Pacific and northern Forest Research Centres will collect data with assistance from DIAND territorial personnel.

## *Land Resources Directorate*

### *Responsibilities*

The Directorate conducts research, provides data and information on land characteristics, and provides, policy advice on national important land use issues. It promotes sound land planning and management, collects data, carries out research and plans programs in co-operation with other federal departments and agencies. This co-operative effort ensures that all programs comply with the guidelines of the Federal Policy on Land Use.

## *Land Resources and Data Systems Branch*

### *Review 1982-83*

The Land Use Monitoring Division continued with the research and production of the Land Use Information Series maps of the Northwest Territories. The Division finished compiling, drafting and printing 29 maps (scale 1:250000) for the Viscount Melville Sound area and completed the research and field surveys for another 24 map sheets in the south Victoria Island – northeast Keewatin area of the N.W.T.

The Land Use Information Series maps are now available for most of the mainland area of Yukon and the Northwest Territories. They combine a wide range of data on renewable resources and the activities associated with them. The maps present information on wildlife and fish habitat areas, native hunting and trapping areas, development areas, mineral resources, historical sites and ecological characteristics. They also contain information useful to land use administrators, planners, and community organizations. The mapping program is financed jointly by Environment Canada and DIAND. Several other federal government departments and agencies also participated in the program. An interdepartmental agreement between DOE and DIAND has been negotiated in order to complete the mapping for all areas north of 60°.

In conjunction with this mapping program, the Ecological Land Classification and Evaluation division provided an ecological overview of the Viscount Melville Sound region that included ecodistrict map-unit boundaries; generalized descriptions of relief, landforms, geology, soils, water features and vegetation; climatic information and ecoregion descriptions; and a coastal classification. An inter-agency, integrated land resource baseline study was undertaken for the Mackenzie Mountains Region of the northwest Territories and Yukon Territory. Baseline data include ecodistricts, ecosections (for portions of the area), drainage divisions, conservation areas, water bodies, and mining/oil/gas data. Computerized land (and some marine) resource data bases were created in the Canada Land Data System for the Beaufort Sea, Lancaster Sound,

Viscount Melville Sound, and Mackenzie Mountains regions. A preliminary examination was initiated to evaluate important wetland ecosystems throughout the Beaufort Sea and the western Northwest Passage regions. The Branch is also working on a micro-computer based system that users can program to manipulate northern ecological land data. This project has particular importance in locations that do not have ready access to the Canada Land Data System.

### *Plans for 1983-84*

The 24 Land Use Information Series maps for the south Victoria Island – northeast Keewatin area will be completed during this year. Literature reviews, field surveys and map compilation will be carried out for 25 maps in the Melville Peninsula-Southampton Island area. Several reports and papers relating to various aspects of the program will be prepared and published.

The Ecological Land Classification and Evaluation Division will provide a general ecological overview and coastal classification for the Northern Land Use Information Series maps. Wetland ecosystems throughout the Beaufort Sea and Northwest Passage regions will be evaluated for their ecological significance, with special emphasis on important wildlife habitats.

## *Policy Research and Development Branch*

### *Review 1982-83*

The Federal Land Services Division published and distributed a report entitled "Canada's Special Places in the North", which indicated northern areas of significance to the conservation programs of Parks Canada and the Canadian Wildlife Service. This inventory will serve as a basis for developing and co-ordinating departmental plans, and facilitating consultation with other organizations about the designation of various types of protected conservation areas in the north.

The Branch also helped to evaluate and further develop northern DOE policies and program strategies. As well, the Branch evaluated and advised on DIAND's draft "Comprehensive Conservation Policy and Strategy for the N.W.T. and Yukon", and draft "Land Use Planning in Northern Canada".

#### ***Plans for 1983-84***

The Branch will continue to assist in both developing Environment Canada's policies for the North, and providing policy advice and assistance to other federal departments.

#### ***Pacific and Yukon Region***

##### ***Review 1982-83***

The Lands Directorate's regional office completed the review of documents pertaining to the environmental impact assessment of the Alaska Highway natural gas pipeline. It continued to provide input to the Northern Pipeline Agency/Foothills Pipe Lines environmental plans, procedures manual, and monitoring program.

Advice and services to the Yukon government resources inventory program continued. Ecodistrict mapping for the southern half of Yukon was carried out. Studies in the Beaufort Sea region were conducted and resulted in a planning report and a resource atlas.

##### ***Plans for 1983-84***

Advice and services to the Yukon government and other government agencies regarding land resources and ecological land classification will be continued. Ecodistrict maps and descriptions for southern Yukon will be completed. Papers on northern land-use planning and decision-making will be initiated. Investigations will be made regarding the establishment of a regional departmental data bank for Yukon.

#### **National Hydrology Research Institute**

The National Hydrology Research Institute, established in Ottawa April 1, 1979, carries out scientific studies of surface water, ground water, and snow and ice. These studies include both basic and applied research, as well as modification and development of instrumentation and technology for laboratory and field analysis.

#### ***Surface Water Division***

##### ***Responsibilities***

In northern areas, the Surface Water Division conducts basic and applied research in permafrost hydrology. It provides consultative services on northern water problems and carries out specific water-related studies, both in support of the Inland Waters Directorate mandate and for other government agencies.

##### ***Review 1982-83***

Observations of break-up on the Liard and Mackenzie Rivers near Fort Simpson, N.W.T. were made during May 1982. The timing and characteristics of break-up were recorded using 35 mm oblique aerial photography; ice thickness was obtained from pans stranded along the shore; surface water temperatures were monitored; and water levels were observed. A report was prepared and submitted to Water Resources Division, DIAND.

In the Mackenzie Delta, a survey of pre-break-up ice thickness was undertaken. On the lower Mackenzie and in the Mackenzie Delta, observations of ice break-up were made to augment the existing data base and continue the Mackenzie ice regime study. The progress of break-up was studied during May and early June from Norman Wells to the Beaufort Sea through vertical aerial photography and oblique 35 mm photography using transects established in previous study years. Water level changes were monitored using standard levelling techniques at a number of river and delta sites, and water temperatures were measured subsequent to ice clearance. Because of record or near-record water levels throughout the delta during break-up, backwater flooding was photographed extensively.

Because of the absence of warm water from the Liard River during the 1982 spring break-up, broken ice filled the Mackenzie River for distances of over 400 km. As a result, a series of densely packed ice jams formed below Point Separation. These jams produced record or near record levels at Arctic Red River and later at Aklavik and Inuvik. Preliminary estimates suggest that over 95 per cent of the delta experienced ice-related flood conditions.

Lake season water temperatures were monitored using recording submersible thermographs at Inuvik, Arctic Red River and Fort McPherson during October until freeze-up. Progression of the 1982 freeze-up was monitored from light aircraft along portions of the Liard River and in the Mackenzie River from Fort Providence to the Mackenzie Delta. Field reconnaissance was also carried out of potential jam sites, especially in the region near Fort Simpson, N.W.T. A number of techniques for measuring ice jam characteristics and processes were being devised and appropriate equipment assembled for the 1983 field season.

Investigation of the water level regimes of a variety of lakes in the Mackenzie Delta continued in 1982. This work will provide baseline information for assessing the potential impact of increased flow regulation that will result if dams are constructed on the Liard River. Time-lapse photography of water levels at six sites within two study areas was obtained from spring break-up until almost freeze-up (late April to September). Climatological data were collected at both study areas and water quality characteristics were investigated, starting with ice core analysis in April. This information is intended to indicate to some extent whether or not the Delta is a pulse stabilizing system. A third study area was established, and time-lapse photography will begin there in 1983.

East of the Mackenzie Delta, data were collected at three basin sites in the taiga zone south of Inuvik and at six basin sites in the tundra zone between Inuvik and Tuktoyaktuk. Surveys of culvert ice accumulation, river icings, late winter snowpack water equivalent, discharge and meteorological elements were carried out at appropriate locations in the basin. A report on the 1980 field season was completed.

As part of the Canada-Northwest Territories Flood Damage Reduction Program, an historical flood review of five Mackenzie Valley communities and two Liard Valley communities was undertaken. The objective was to determine, in each, the level and extent of past extreme flood events. Information on past flood events was obtained from field investigations and archival research carried out from May through August. Long-term residents of each community were interviewed, and journals kept by the Hudson's Bay Company, the Roman Catholic church and Royal Canadian Mounted Police were reviewed for information on past flood events. To supplement the historical data, physical evidence of past flood and ice shove events was investigated in each community.

The data on flood events for all seven communities were analysed to establish historical floodlines. Where evidence was available, ice shove limits of each event were defined. The extreme flood limits for each community were plotted on 1:2 000 scale topographic maps. A report was submitted to the Technical Committee of the Northwest Territories Flood Damage Reduction Program.

Analysis of stream channel and sub-bed observations of hydrothermal phenomena was completed at sites near Inuvik. Reports were prepared on timing and location of stream icings, heat and ground water flow beneath channels, mid-winter freezing and overflow processes in channels and floodplain, and heat transfer to river ice from the sub-bed.

#### **Plans for 1983-84**

##### **A. Fort Simpson Region**

The occurrence, causes, characteristics and consequences of ice jams on the Liard and Mackenzie Rivers near Fort Simpson will be studied by measuring the energy balance of river ice preceding break-up, monitoring the advance of the spring flood wave, and observing the progress of break-up. Aerial and ground photography will be used to monitor the timing and characteristics of river ice break-up on the Liard and Mackenzie Rivers within a 30 km radius of Fort Simpson.

During the break-up period, Mackenzie and Liard River water temperatures will be monitored near Fort Simpson to investigate the interaction of water temperatures and the ice regime.

Observations of island and (possibly) shoal erosion by river ice will be made during and after break-up to determine the preferred sites and extent of river ice scour. Field inspections in July will enable site selection for future studies.

##### **B. Mackenzie Delta Region**

Ice break-up along the lower Mackenzie River and throughout the Delta will be monitored by aerial and ground photography, as in past years.

Water levels in six delta lakes and three small channels will be monitored using staff gauges and automatic time-lapse camera systems. Snow survey and meteorological data will be obtained, and water temperatures and samples will be taken during short visits throughout the ice-free season.

The Inuvik-Tuktoyaktuk Highway hydrology study will be continuing much as in previous years. Snow survey and meteorological data will be obtained at sites along the proposed route of the Inuvik-Tuktoyaktuk Highway and at one site along the Dempster Highway south of Inuvik. Water Survey of Canada personnel will be monitoring the discharge of four small rivers during the open water season (Boot, Cabin, Ryan and Hans Creeks).

A reconnaissance study will be undertaken to select sites for investigating channel instability in the Delta. Aerial and ground observations of bank erosion during and after break-up will be made, with emphasis on ice jam sites. Collection of data on channel geometry and materials, as well as high flow velocity and sediment transport patterns will likely begin.

#### **Snow and Ice Division**

##### **Responsibilities**

The Snow and Ice Division studies hydrologic processes in the North and their impact on northern development. It researches the mechanical and electrical properties of snow and ice, examines glaciers, mountain snowpacks, snow metamorphism and other aspects of alpine hydrology, and develops and maintains an inventory of perennial snow and ice in Canada.

##### **Review 1982-83**

Mount Logan core is currently being processed for oxygen isotope content. Deuterium/hydrogen ratios are being determined at certain intervals to clarify atmospheric processes that evidently obscure the interpretation of the  $^{18}\text{O}/^{16}\text{O}$  data there. Chemical analyses of the core samples are being carried out (a) to check the identification of major volcanic events, which provide time control to the core (b) to answer questions relating to atmospheric pollution ( $\text{SO}_4^{2-}$ ,  $\text{NO}_x^-$ ) (c) to see whether chemical variations in the core and climate change (e.g.  $\text{SO}_4^{2-}$ ) peaks associated with major volcanic events can be linked to a subsequent cooling over periods of several years. The  $\text{CO}_2$  content of ice greater than about 200 years old is found to be about 88% of present values.

##### **Plans for 1983-84**

Further work will be carried out at the new core site ("Eclipse") near Mount Logan. This is necessary to check the results of the Mount Logan site to determine the latter's regional applicability.

An electrothermal corer is nearly complete. After testing, it will be used at Eclipse in 1984 or 1985.

Analysis of the ice cores from Mount Logan for various constituents will be continued, particularly with a view to establishing the recent climatic history of the area and developing climatic transfer functions.

#### **Ground Water Division**

##### **Responsibilities**

The Ground Water Division research programs emphasize the development of hydrological techniques, methodologies and instrumentation for ground water resource evaluation and ground water aspects of environmental impacts.

### **Review 1982-83**

The "filling-time" counter installed in November 1981 at the Takhini Hot Spring, Yukon, is performing according to expectations.

Field measurements were carried out and water samples were collected for chemical and isotope ( $^2\text{H}$ ,  $^3\text{H}$ ,  $^{18}\text{O}$ ,  $^{34}\text{S}$ ) analyses, in a number of ground water discharge areas along the Dempster Highway between Klondike Crossing and Fort McPherson. Points of interest were selected for the Yukon-Mackenzie field trip of the Fourth International Conference on Permafrost, and descriptions were prepared for the field trip guidebook.

Recent reconstruction of the Alaska Highway crossing of Burlap Creek (km 1817.5) may affect icing activity and ground movements at this site. For this reason, three time-lapse cameras, ice-level gauges and shallow piezometers were installed in the Burlap Creek icing area. A section across the icing area was surveyed to enable monitoring of ground movements during the 1982-83 winter.

The field work in the Pine Point area has been terminated. Borehole logs of 1 501 mineral exploration holes and 64 oil-wells have been collected from public files and evaluated for hydrogeologic and geologic parameters by means of a newly developed computer data and retrieval system. The final report on the Pine Point study is in preparation.

In September 1982, two Division staff members joined a cruise of the Canadian research vessel Hudson. The ship visited fjords on the east coast of Baffin Island between Frobisher Bay and Pond Inlet to study ground water discharge in higher latitudes.

Ground water flow in tidal glaciers in the fjord deltas and under the fjords has been identified and observed with geophysical instruments. Some of the discharge points were sampled for chemical and isotope analysis. The cause for a polynya at the head of Cambridge fjord was confirmed to be ground water, discharging at 42 m depth. Recordings of the rising plume of ground water were made.

### **Plans for 1983-84**

Analysis and interpretation of field results and time-lapse photography from icing sites along the Alaska Highway will continue. Reports will be prepared on studies of icings, associated frost blisters and the geochemistry of ground water discharge. A liquid-pressure sensor suitable for use in subsurface environments subject to freezing and a recording interface for AC resistance frost gauges are being developed. Investigations of ground water discharge areas will continue.

### **Water Planning and Management Branch**

#### **Responsibilities**

This Branch carries out water resource studies and programs to reduce flood damage and improve water management. It also advises the Northwest Territories and Yukon on water planning and management and participates in assessments of the environmental effects of development projects.

#### **Review 1982-1983**

The Yukon River Basin Agreement was signed November 24, 1980 by Ministers representing Canada (Environment, Indian Affairs and Northern Development), British Columbia and Yukon Territory. The \$2.2 million agreement provides for an inter-governmental committee to assess resource development alternatives in the Yukon Basin in Canada. Early in 1983, the Committee finalized plans and budgets covering the remainder of the study and was considering a request to extend the study from December 31, 1983 until September 30, 1984.

The Mackenzie River Basin Committee published a final study report and eight supplements for the Mackenzie River Basin Study. These were widely distributed and increased the knowledge of water and related resources in the basin and promoted future co-operation in planning for the best use of these resources.

Under a Flood Damage Reduction Agreement signed in 1979, work continued on flood risk mapping in Seven Communities in the Northwest Territories. Negotiations were started on a similar agreement for Yukon.

#### **Plans for 1983-84**

Negotiations will continue toward developing a Flood Damage Reduction Agreement for Yukon Territory.

Work will continue on study designs and budgets for the Mackenzie River Basin implementation program.

### **Water Quality Branch**

#### **Responsibilities**

The Water Quality Branch (WQB) collects, analyses, interprets and disseminates water quality data. It obtains these data from reference points across Canada and augments them by detailed information collected in comprehensive surveys.

#### **Review 1982-83**

The Branch provides services to federal programs related to national parks, data collection and surveys in Yukon and Northwest Territories. It also participates in analysing samples and storing and disseminating data collected in the Territories. The work for the Northwest Territories is administered by a group from the Inland Waters Directorate offices in Regina and Yellowknife. Work related to Yukon is administered from the Pacific and Yukon office in Vancouver. The Branch participates in joint studies with DIAND by providing analytical and interpretive services for water quality management programs.

In the N.W.T., an ongoing monitoring project carried out from 16 stations was started in 1978. The sites are in the same locations as the hydrometric sites and are sampled by Water Survey of Canada (WCS) staff when they visit the hydrometric stations. Besides measuring the major ions and nutrients from mining activities in the North, the Branch routinely checks the sites for total and extractable metals. Two stations in the N.W.T. (Hay and Liard Rivers) are also part of the inter-jurisdictional monitoring carried out under the mandate of the 1909 Boundary Waters Treaty. In addition to carrying out its monitoring work, WQB conducts studies to answer specific questions. For example, together with Geological Survey of Canada - Energy, Mines and Resources (GSC-EMR) the Branch conducted a special survey of 20 lakes in Cape Herschel in 1981. A report describing the results of this work has been prepared.

As part of the Mackenzie River Basin Study Program, the WQB brought together all water quality data that federal and provincial agencies had collected between 1970 and 1979. These data were published in 1981 in a report that summarizes all available information on the water quality of the Basin. A map of all sampling locations was included with the publication. The data have been coded in our National Water Quality Data Bank (AQUADAT) format. Accordingly, data are available for statistical analysis to determine any changes or trends that may have occurred over the last 20 years. The WQB is analysing these data and is preparing an interpretative report relating the data to the water characteristics in the basin.

#### **Plans for 1983-84**

The water quality monitoring plan for the N.W.T. for 1983-84 will better address developmental and environmental concerns. Recently, an agreement was reached between the federal, Yukon and N.C. governments under the Canada Water Act to study the water resources of the Yukon River Basin. The Water Quality Branch has been involved in designing studies to monitor conditions and trends, develop a better understanding of river processes, and identify potential problems from proposed resource developments. Reports being published on studies on the Schwatka Lake and international boundary reaches of the Yukon River will assist in this design.

The Branch will continue to co-operate with DIAND and other water-oriented services of Environment Canada in carrying out Northern basin studies and other water quality management programs by providing analytical and interpretative services. A current major effort is the analysis of data from the Mackenzie River Basin. The Branch is preparing an interpretative report that draws upon all water quality data collected over the period 1960 to 1979. This work is expected to be completed by the end of 1983.

### **Water Resources Branch**

#### **Responsibilities**

The Water Resources Branch operates through two Divisions: the Water Survey of Canada Division and the Hydrology Division. There are eight Water Resources Branch regional establishments across Canada. Six of them are headed by Regional Chiefs in Vancouver, Calgary, Regina, Winnipeg, Guelph and Dartmouth. The seventh office, was established in 1980. It is located in Yellowknife, N.W.T., and is headed by a Chief, N.W.T. Program. The eighth office, in Longueuil, P.Q., is headed by a Supervisor of Operations. Water Resources Branch programs in Yukon are administered by the Vancouver Regional Office.

The responsibilities of the Water Resources Branch include collecting, processing, analysing, storing, interpreting and providing water quantity and sediment data for water resources management.

The Branch also provides advice and assistance in preparing briefing notes and background and position papers for developing policies and priorities on various aspects of national water programs.

#### *Water Survey of Canada Division (Headquarters)*

#### **Responsibilities**

The Water Survey of Canada Division (Headquarters) provides technical support to the Survey's Regional Offices. It develops techniques, instrumentation and standards for collecting and computing hydrometric data. It then publishes the resultant data and maintains data banks. The Division does network planning for hydrometric stations, conducts non-routine hydrometric field surveys, measures the discharge rates of rivers under unsteady flow conditions, and measures sediment deposition in reservoirs by carrying out bathymetric surveys. Finally, the Division carries out morphological surveys and studies on river channels, drainage basins, and estuaries.

#### **Review 1982-83**

Since the new series of LANDSAT satellites will not be equipped with transponders for re-transmitting data from Data Collection Platforms (DCP's), five DCP's operating on tributaries of the Mackenzie River were recalled. In co-operation with NHRI, they

were modified to operate in the GOES transmissions mode. Assistance was provided to our N.W.T. staff to reinstall the DCP's. A DOE/DFO DCP Communications Working Group was formed to develop a plan for DCP data communication that would meet Canadian needs in the foreseeable future. The plan included the installation of DCP data receive sites in the GOES mode at Vancouver, Prince Albert and Downsview. A five-year program began for acquiring and installing 350 DCP's. Of these, 15 are scheduled to be installed in Yukon, and 108 in the Northwest Territories.

Development of a compact, automated moving-boat flow-measuring system was completed. Training was provided to WRB staff stationed at Yellowknife in the operation and application of a prototype model of the moving-boat system, and the flows at three sites on the Mackenzie River were measured.

A solar energy system to power instrumentation at hydrometric stations at northern and remote sites has been developed in co-operation with NRC. The proposed sediment data collection program for the Mackenzie River Basin was reviewed. Indications are that a more comprehensive assessment of existing data is needed.

#### **Plans for 1983-84**

The first year of the five-year DCP acquisition and installation program will begin. Of the 70 DCP's that will be acquired in 1983-84, 22 are scheduled for installation in the N.W.T. and 5 in Yukon. The actual number installed in the field will depend on delivery schedules and weather. A training program has been scheduled to train WRB staff in the operation and use of DCP and EDP systems. A joint ECS/AES Treasury Board submission for the funding to acquire and install GOES data receive sites will be made.

Training and assistance in moving-boat flow-measuring procedures will be provided to WRB staff stationed in the N.W.T. to allow them to define extreme high water ratings for remote sub-Arctic streams.

A review of existing data and some preliminary field studies of the sedimentology and morphology of the Mackenzie River are planned. Most of this work is to be done under contract.

#### *Water Survey of Canada Division (Regional)*

##### **Review 1982-83**

After 14 years, the Water Survey of Canada relinquished its responsibility for operating tidal stations in Arctic waters under the terms of a rewritten agreement with the Canadian Hydrographic Service.

In the Northwest Territories, staffing was completed with the exception of two positions – a water quality specialist and a network planning and studies hydrologist. Ten hydrometric stations were constructed. The surface water and related networks included 134 hydrometric, 6 sediment and 12 water quality stations. Staff were trained to use an advanced moving-boat flow-measurement technique. The method appears suitable for large northern rivers and saves time while maintaining the accuracy of traditional methods.

Using data transmitted via satellite by data collection platforms, daily stage forecasts for the Mackenzie River were provided to various agencies and transportation companies.

##### **Plans for 1983-84**

The Water Survey of Canada will continue to operate the hydrometric network.

Ten new hydrometric stations will be constructed and a number of preliminary surveys done in support of future network expansion. Several short-term field camps will be established to study break-up phenomena and define extreme high water ratings for remote sub-Arctic streams.

Surface water data processing will be done entirely in the North using computer services based in Yellowknife.

Additional staffing will depend on the allocation of positions and the availability of suitable applicants.

A network of 11 hydrometric stations located in the Mackenzie River Delta will continue to provide data for calibrating a Delta flow distribution model.

#### *The Hydrology Division (Headquarters)*

The Hydrology Division conducts analytical and interpretive studies to support and complement the basic data collection activities of the Water Survey of Canada Division. The functions of the Division are: to develop and test new and improved analytical methods of operational hydrology; to transfer the technology to the operational components in the regions and Headquarters for practical applications; to provide functional guidance to regional staff in data interpretation and network evaluation and planning activities; to carry out joint studies with the regions; and to participate and represent the Branch, Directorate and Service on interagency activities at the regional, national and international levels.

##### **Review of 1982-83**

An evaluation of the hydrometric network in the Northwest Territories was carried out under contract with Shawinigan Engineering. An August 1982 report provides details of the results and the approach used in determining the approximate number and locations of additional hydrometric stations required to provide a minimum baseline network in the Northwest Territories.

The Division prepared a tentative proposal for a systematic study to explain (within the limits of data availability) the hydrology of the Mackenzie River system. The purposes of the proposal were to promote discussion and to provide a basis for developing a detailed proposal for implementing "Recommendation No. 3" of the Mackenzie River Basin Committee Report of 1981.

A February 1983 state-of-the-art report on hydrometric network design was prepared under contract with S.I. Solomon and Associates.

The Division has computerized and documented several statistical techniques for flow frequency analysis and has prepared a user-manual for a computerized water budget model. These will be made available to the hydrologic community. The Division also conducted several seminars as a means of making technology developed at Headquarters available for use in the regions.

The CHOMS data base maintained by the Division as the Canadian HOMS National Reference Centre is now fully operational on Environment Canada's WATDOC System. The CHOMS data base provides abstracts or descriptions of hydrological techniques that are available for transfer between members of WMO/HOMS for use in water resource studies.

##### **Plans for 1983-84**

The work plans for 1983-84 include: continuing to develop and document techniques and procedures for filling-in missing hydrometric data of short duration; continuing to develop, improve and document techniques and procedures for regional flow frequency analysis and for conceptual modelling used in estimating streamflow from precipitation and other meteorological data; participating in technology transfer and joint studies with the regions and other groups at Headquarters aimed at supplementing data analysis and interpretation, and network evaluation and design programs; and converting all programs developed by the Division for interactive use on the DEC PRO 350 micro-computer.

Agriculture Canada provides technical advice to the North on matters relating to agricultural production, soils and vegetation. The Department also provides research and consultative services on insects and indigenous animals that subsist on local vegetation.

### Research Branch

The Branch's northern activities involve surveying vegetation and soils and collecting and identifying insects, fungi and plants. These activities, as summarized below, are carried out by technical experts from the Land Resource Research Institute and the Biosystematics Research Institute in Ottawa.

### Land Resource Research Institute (LRRRI)

#### *Review 1982-1983*

The field work on mapping the soil landscapes of the Great Bear and the northern half of the Slave River map areas has been completed. The preliminary soil landscape maps at a scale of 1:1 000 000 are available and provide information on landscape features, surficial materials, soils, wetlands, water bodies, and associated vegetation.

At the request of Environment Canada, the Institute carried out a broad soil and landscape study in the southern part of Victoria Island and the southern portion of Boothia Peninsula. The information obtained will be incorporated in the northern land use maps of these areas published by Environment Canada and the Department of Indian Affairs and Northern Development (DIAND). Information generated during a similar soil and landscape study carried out in the Mackenzie Mountains, also at the request of Environment Canada, will, together with other biophysical information, provide the base for land use planning in that region.

The preparation of sites for the Fourth International Permafrost Conference field tour of the Arctic Red River, Inuvik and Mackenzie Delta areas was completed. The sections of the tour guidebook on soils and vegetation and the site descriptions were also completed. This tour will be held in the summer of 1983.

A co-operative study was undertaken by Geological Survey of Canada (GSC), DIAND and LRRRI to determine the relationships between soils and surficial deposits and to determine the peatland resources of the McQuesten map area.

At the request of the Yukon Department of Renewable Resources, a Yukon-Canada Soil Survey office was established in Whitehorse. A senior pedologist was hired to head the operation and to develop the program in co-operation with the Yukon Government and DIAND.

The Institute continued to monitor soil temperatures at eight sites in the Inuvik-Arctic Red River area. The objectives of this study are to characterize the soil temperature regime, the thermal regime of the active layer, and the high sub-Arctic soil climatic region.

#### *Plans for 1983-84*

The Fourth International Permafrost Conference tour will be conducted in the Inuvik-Arctic Red River and Mackenzie Delta areas in co-operation with GSC.

At its request, the Institute will carry out field studies to establish the relationships between soils and surficial deposits in the McQuesten and adjacent areas of Yukon. This work will help to identify, differentiate, and map the very old, highly weathered surficial deposits found in these areas. To date, geological techniques alone have proven inadequate. In view of the experience gained in other countries, GSC would like to use the pedological techniques for solving these problems. It has also asked for assistance in mapping and characterizing the peatlands and in determining the peat resources of this area, using the techniques developed by LRRRI.

# Department of Fisheries and Oceans

Through the Yukon-Canada Soil Survey office, the Institute provides technical input to the development of an agricultural policy for Yukon.

At the request of the National Museums of Canada, more soil studies will be conducted in the Old Crow area of Yukon. This information will determine the distribution and characteristics of soils in areas adjacent to archaeological sites in order to identify and distinguish soil horizons from depositional layers resulting from human occupation. It also helps in reconstructing the paleo-climate of the area.

## Biosystematics Research Institute

### Review 1982-83

Experts in the Biosystematics Research Institute provided an identification service for specimens of insects, arachnids, plants and fungi from the North submitted by various departments and agencies. A field survey of insects and plants was carried out in the Northwest Territories and Yukon.

### Plans for 1983-84

Plant taxonomists will return to Yukon in 1983 to carry out another survey. Plans call for a publication of the flora of the Yukon Territory to be ready by 1986. Faunistic studies of mites, beetles, flies, wasps, butterflies, and moths of the Canadian Arctic will continue.

## Oceanography

In general, Pacific Region operates in the Western Arctic, including the Beaufort Sea; Central Region in the Arctic Islands and Hudson/James Bays; Québec Region in Hudson/James Bays; and Atlantic Region in the Labrador Sea, Davis Strait, Baffin Bay, and the Eastern Arctic.

### Review of 1982-83

#### Physical Oceanography

Arctic Ocean studies at the Institute of Ocean Sciences (IOS) centred around three projects in 1982-83. The first is the ongoing interpretation of EUBEX (Eurasian Basin Experiment) data collected north of Svalbard in March and April 1981. The second program involved installing gauges around the edges of the Arctic Ocean Basin to monitor water height variations during long non-tidal periods. A third program is being planned, a water-mass observational program in the data-sparse region north of Ellesmere Island. This work will be integrated with the CESAR program.

Physical oceanography in the Arctic Archipelago is a large and continuing program concentrated in the area of the Northwest Passage. During 1982, an intensive field program was conducted in Prince of Wales Strait, M'Clure Strait and Viscount Melville Sound. An aircraft-based CTD (conductivity, temperature, depth) survey was conducted at the same time in the Sverdrup Basin, Western M'Clure Strait, Amundsen Sound, M'Clin-tock channel, Prince Regent Inlet, and Lancaster Sound.

Shelf processes, where the mixed layer of the Arctic Ocean interacts with shelf geometry under conditions of uniform and non-uniform sea ice growth, continues to receive attention. Work on the hydrodynamics of subsea blowouts and associated phenomena is drawing to a close with the publication of results on chemical rates of hydrate production and the implications for gas-bubble behaviour. Studies on the oceanography of Bridport Inlet, Melville Island, will be completed with the publication of the final report that deals with data collected in 1980. The work associated with the Dundas Island polynyas will be concluded when the scientific papers describing the results are published.

Working from the stable winter ice cover of March and April 1982, the Bayfield Laboratory for Marine Science and Surveys (BLMSS) carried out its second field survey of the multi-disciplinary Northwest Passage/Barrow Strait Oceanography Program. The general aim of this research is to document the spatial and temporal variations of the waterway, and to understand the interrelationships of its physical, chemical, and biological properties. These will be affected by major northern resource developments such as the proposed Arctic Pilot Project and Beaufort Sea Development Project. Highlights of the study to date include the retrieval of the year-long current meter array which had shifted position by 65 km due to the influence of heavy ice-keel development.

In James Bay, work was completed on a two-layer numerical model of freshwater plume dispersion under an ice-cover. The model showed that the post-project La Grande River plume would cover a much larger area of northeastern James Bay, thus inhibiting the spring phytoplankton bloom over this wider area. A current meter array recovered 160 km northeast of Churchill in Hudson Bay provided not only the first data during the ice-formation and ice-breakup periods, but also enabled scientists to examine the effect of ice-cover on tidal flow constituents.

The gyroscopically-referenced, unmanned current profiling system (G-UMPS) was operated continuously from the ice cover in Barrow Strait for periods ranging from 8 to 10 days. It was repackaged to reduce weight and include an internal power supply. Further modifications are being made to the system to include a pressure sensor for a better indication of instrument depth.

As a continuation of the ice classification radar studies, an experiment was carried out at Borden Peninsula to investigate multi-path interference effects on the detection of low-lying ice targets. Laboratory measurements of dielectric properties of both freshwater and sea-ice have been started. Contract work is nearing completion on a vertical one-dimensional numerical model of sea-ice growth and ablation, including an ocean-mixed layer component.

The Labrador continental shelf has been monitored by the Bedford Institute of Oceanography (BIO) since 1976. The data on the anomalously high intermediate-layer temperatures that occurred in the fall of 1977 suggest that there is a mechanism for transport of this warm water seasonally. One of the primary objectives of the continuing and very difficult deployment of long-term oceanographic moorings by BIO on the Labrador continental shelf is to gain more knowledge about this little understood mechanism.

During the past year, a simple dynamic model of iceberg drift has been applied to data from a number of tracks of icebergs observed from drillships on the Labrador Shelf. A computer tape containing industry data up to 1979 was searched to identify cases in which an iceberg had passed within three nautical miles (5.6 km) of a drillship, and in which winds, currents, and an estimate of iceberg size or mass had been reported. In about half of the cases identified, a general resemblance between drift velocity and the reported winds and currents indicated that modelling would be justified.

### *Chemical Oceanography*

The Ocean Chemistry Division at IOS has contributed extensively to preparing data inventories for the southern Beaufort Sea and has assisted with the physical inventory, which is now in print. It has also completed the companion chemical inventory. A budget study for elements and compounds entering and residing in the Beaufort Sea is undergoing final revision.

A paper examining metal inputs to the Beaufort Sea in comparison to drilling fluids was published.

Radionuclide measurements are currently being performed on sediment cores collected in various Baffin Island fiords during the CSS Hudson cruise in 1982 to determine sedimentation rates and geochronologies for sediment deposition in these systems. These results will be used to evaluate the time-dependent influence of the discharge and sediment transport characteristics of glacier-fed rivers draining into the fiords.

Extremely high levels of dissolved zinc, lead and cadmium have been found in a West Greenland fiord. The indigenous biota also were found to contain high levels of the metals. At the request of the Greenland Geological Survey, an investigation began on the concentrations of these metals in suspended particulate matter and core samples from the fiord to determine the levels and amounts that might be potentially available to marine biota. Sample analyses show that the particulate matter is heavily contaminated.

Distribution of the long-lived fission product nuclides, caesium-137 and strontium-90 in the Arctic Ocean and Norwegian Sea was examined to investigate anomalies in the vertical distribution of these nuclides in the two areas. The surface waters of both the Norwegian Sea and the Arctic Ocean exhibit elevated levels of caesium-137 that are consistent with the transport of soluble fission products from the Irish Sea.

Various studies of the vertical profile of salinity and oxygen isotope ratios in regions affected by sea ice formation and melting have been made in an attempt to quantify the extent of water compositional changes resulting from ion fractionation in the formation of sea ice. These methods have been used to obtain estimates of meltwater fluxes through restricted northern passages such as Hudson Strait.

### **Marine Ecology**

During the second year of the Barrow Strait study, biological investigations concentrated on a regional survey of nutrient chemistry and zooplankton. The newly designed plankton closing net and water bottles for through-the-ice sampling were tested and worked successfully.

In preparation for the 1983 Barrow Strait study, work continued on improving sampling techniques, such as using acoustic methods for detecting zooplankton, and calibration of flow through a zooplankton net.

Studies of the major oceanographic factors affecting fish production variability in the Labrador/Newfoundland fisheries have been initiated. Cruises to this region have concentrated their studies on measuring phytoplankton production, zooplankton biomass, and nutrients. Recent nitrogen studies in the eastern Canadian Arctic have provided insight into the environmental control of high-latitude phytoplankton production.

Studies dealing with the structure of zooplankton and micronekton communities in relation to their physical environment are continuing. Two regions were examined: the northeastern part of Baffin Bay (Melville Bay) and the Lancaster Sound area. Melville Bay has a uniform and stable vertical structure, while the Lancaster Sound region has a physically dynamic one. It was also found to have two to three times the biomass of zooplankton found in Melville Bay; however the species composition was the same.

### **Ocean Data and Information**

During 1982-83, the Ocean Information Division of IOS participated in a number of intergovernmental meetings and meetings between industry and government. Considerable effort was spent on preparing for reviewing the Beaufort Sea Hydrocarbon Production Environmental Impact Statement. The Division also continued to concentrate on its joint government/industry contract program of cataloguing physical, chemical and biological oceanographic, fisheries and whale data sets.

While the program has covered many sectors of the Arctic, priority has been given to assessing those data that contribute most to addressing Beaufort Sea and N.W. Passage environmental impact concerns. The first volume deals with Beaufort Sea physical oceanography and was published in November 1982. It will be followed shortly by the following reports:

<i>Title</i>	<i>Publication Date</i>	<i>Availability</i>
Beaufort Sea: Chemical	February 1983	Published
Beaufort Sea: Benthos	January 1983	(Stage 1 Draft only) Preliminary Draft
Beaufort Sea: Fish	February 1983	Stage 2 Draft
Beaufort Sea: Whales	February 1983	Stage 2 Draft
N.W. Passage: Physical	December 1982	Final Draft
N.W. Passage: Chemical	January 1983	1st Draft
Oceanography		
Queen Elizabeth Island	January 1983	Final Draft
Physical Oceanography		
Baffin Bay & Ellesmere Island: Physical Oceanography	January 1983	Final Draft

Implementation of the recommendations from the Interdepartmental Study on Ocean Information Service (1980) has been progressing well. A Canadian Marine Data Inventory (CAMDI) of all OSS's data was initiated in 1980. The project has been expanded to include all datasets held by both private industry and government sources other than DFO. After an initial 45 projects had been described in the inventory in 1980, 618 were added the following year and another 265 in 1982. CAMDI now describes 925 different projects for which 6 629 different datasets have been recorded. A pilot catalogue was published in December 1981.

## General

Ocean Science and Surveys (OSS) continued to provide the secretariat for the Canadian Committee on Oceanography (CCO) Panel on Ice, and represented the Department on the Environmental Studies Revolving Fund Steering Committee. In addition, the Ocean

Science Affairs Branch represented OSS on the Interdepartmental Environmental Review Committee (IERC), dealing with approvals for exploratory drilling; on the Beaufort Sea Shore Zone Facilities Siting Study; and on the Environmental Advisory Committee on Arctic Marine Transportation. The Branch also participated in the development of the federal Northern Oil and Gas Action Plan (NOGAP). It manages the development of relevant OSS R&D project proposals for the National Energy Program and is producing a departmental position paper on Beaufort Sea Development. The Branch continues to develop program proposals for Arctic oceanography and participates in the management of the Adams Island Ice Deformation Project. Work with other governments included discussions with German officials on the possibility of joint polar research in oceanography under the Canada/FRG Bilateral Science and Technology Agreement and the formulation of research proposals for possible Arctic collaboration with Japan, the U.S.S.R. and France.

## Plans for 1983-84

The water-mass observational program north of Ellesmere associated with CESAR will be carried out. Physical oceanographic studies in the Arctic archipelago, especially in the area of the Northwest Passage, will be continued, as will studies of water masses in Arctic shelf areas. A resurvey of the Barrow Strait section of the Northwest Passage will begin early in 1983-84. Additional observations will be taken west of the Barrow sill, along with concentrated time-series sampling of physical/chemical and biological parameters south of Resolute. Ice biota studies will include an investigation of the relationship between algae productivity and animal feeding characteristics. In conjunction with the hydrographic tidal survey in Hudson Bay, it is proposed that year-long current meter arrays be deployed.

A preliminary field trip is planned for the summer of 1983 to examine the Mackenzie River and estuary. The main objective is to assess the transport of particulate and dissolved hydrocarbons and metals to the Beaufort Sea. Another data inventory (N.W. Passage), and a background paper on the oceanography of Amundsen Gulf are being prepared.

OSS will participate in Marginal Ice Zone Experiments (MIZEX) (a series of large, multi-national studies in the Greenland and Bering Seas). These will investigate and model the oceanographic and meteorological processes that control the edge of the pack ice. In a MIZEX experiment in the Greenland Sea during the summer of 1983, four or five ships will sample a 200 km<sup>2</sup> area. These ships and number of data buoys will drift with the ice down the eastern coast of Greenland.

Oceanographic studies of the Hudson Bay/Hudson Strait system are being intensified by the addition of a chemical oceanographic program. Work to be carried out includes the tracing of water masses; identifying various sources of freshwater; measuring hydrocarbon background levels; and conducting geochemical studies.

Work will continue on studying the physiological characteristics of Arctic phytoplankton and how these relate to characteristics of low-latitude species. New emphasis will be placed in the size-structure of primary producers and, specifically, the importance of "pico-plankton" in Arctic environments. This work will be carried out as part of a major biological cruise to Baffin Bay and adjacent waters in the summer of 1983.

OSS will continue its role in the CCO Panel on Ice, the Energy R&D Committees, the Interdepartmental Environmental Review Committee, and the Environmental Advisory Committee on Arctic Marine Transportation. It will be involved in planning Arctic oceanography programs, managing the DFO NOGAP program, the EARP Review of Beaufort Sea Production and Transportation, northern and regional land use planning, and the Environmental Studies Revolving Fund Steering Committee. Work will continue on Ocean Information Systems and the Ocean Climate Program, and on the possible expansion of joint Arctic endeavours with the Federal Republic of Germany, Japan, France, the U.S.A. and the U.S.S.R. The Wave Climate Study will continue to support drilling activities in the Beaufort Sea, with several waverider systems for the oil industry.

# Energy, Mines and Resources

## Geological Survey of Canada (GSC)

### Responsibilities

In general terms, GSC gathers and disseminates information about Canada's oil and gas mass and offshore areas. More specifically, GSC is concerned with both acquiring information on the nature, extent and location of our energy and mineral resources, and developing the technology needed to explore for them. GSC also formulates policies directed toward regulating resource exploration and development and the use of the resources themselves, so that the land's ecology and environmental balance are preserved to the greatest extent possible.

### Review of 1982-83

Preliminary results of the 1982 field season were released in Current Research, Part C (November 1982) and Current Research, Part A (January 1983). Part C contained 8 items on the North, and Part A 21 items.

Field work in the Tay River and adjacent map-areas in Yukon showed that much of the volcanics and sediments placed in the Anvil Range Group is, in fact, part of an older Cambro-Ordovician unit. Therefore, it has more potential for mineral exploration. In the northern Yukon and adjacent District of Mackenzie, field work in the eastern Ogilvi Mountains and in the central Richardson Mountains provided additional stratigraphic information on Proterozoic to Cretaceous intervals. Geochemical field work was largely completed in the Nahanni map-area.

In the Great Slave-Great Bear Lake area, stratigraphic and structural field studies in the Wopmay orogen revealed additional information about the ancient continental margin and the early tectonic history. Minor galena-sphalerite veins along the ancient carbonate shelf edge were also discovered. West and north of Baker Lake, important new information was obtained about the structure and stratigraphy of four major metasedimentary belts and of the Thelon Basin.

In northern Ellesmere Island, reconnaissance mapping and stratigraphic studies of the Paleozoic rocks were completed, and logistical support was provided for three related studies. A field

party investigated the Mesozoic stratigraphy of the eastern Sverdrup Basin and provided logistical support to four related studies.

On King William Island and the adjacent mainland, field investigations of the surficial geology, including the interpretation of relic iceberg scours, were completed and a terrain inventory map is being printed. Field work on Boothia Peninsula concentrated on examining high quality Quaternary stratigraphic sections along Pasley River. These sections revealed sediments from two major glaciations and three non-glacial intervals. Field work began on western Victoria Island and will provide maps that can be used for engineering work, land use planning, and mineral prospecting. Cores were retrieved from several lakes on Ellesmere Island and will be used for detailed paleontological and stratigraphic studies of the Quaternary history. Surficial geological investigations were continued near Norman Wells and Carrot Lake in the Mackenzie Valley corridor. Studies of geochemical processes in the lake basins of eastern Keewatin have shown that surface sediments from the flanks of a basin may contain three to four times the uranium than deep-water sediments of lake centres do. Examination of the ferromanganese coatings of submerged boulder pavements suggest that they are more informative of mineralization in a lake basin than are the lake sediments.

Surveys in the Beaufort Sea obtained new data that assist in the delineation of permafrost limits, soil properties, zonation and origin of pingos, slope stability, and prediction of downslope movement. Data on sediment transport near the recently constructed islands for offshore drilling were collected using RALPH, a sediment dynamics monitor developed at Atlantic Geoscience Centre. Two deep sounding electro-magnetic systems tested near Tuktoyaktuk gave good results. A successful cruise to Baffin Island provided preliminary data on the geological conditions of Arctic fjords.

Major steps forward were made in adapting the new concepts of stratigraphy and paleontology of the Beaufort-Mackenzie and Sverdrup Basins into the hydrocarbon assessments for these areas. Plays based on these concepts were developed and the parameters documented for the Mesozoic of the Sverdrup Basin and the Beaufort-Mackenzie Basin.

Regional uranium metallogenic studies in the Yukon and N.W.T. resulted in the discovery of a number of minor uranium occurrences. An assessment of the mineral resource potential of the Bathurst Inlet area, N.W.T. (including the proposed Bathurst Inlet National Park) was completed. Follow-up field work to obtain data on geochemistry and mineral occurrence information was conducted in the Mt. Sedgewick area of the proposed Northern Yukon National Park. As an aid to defining mineral exploration targets, statistical analysis techniques were applied to geochemical and geological data from the Thirty Mile Lake and MacQuoid Lake map-areas in central Keewatin, and to Landsat data and geological and geochemical variables from part of the Baker Lake area. A radon-helium survey at Baker Lake, undertaken with Inco, outlined fracture-like features where mineralized groundwater entered the lake.

Ocean aeromagnetic surveys were completed along the north coast of Ellesmere Island, and fill-in surveys completed the coverage of Kane Basin and delineated a sedimentary basin at its northern end.

Preparations were continued for CESAR, the multidisciplinary study of the Alpha ridge (about 600 kilometers northwest of Ellesmere Island) including the shipment of a large amount of equipment by sealift to Resolute. The geological and geophysical field work will be undertaken jointly with Earth Physics Branch in spring 1983.

### **Plans for 1983-84**

The Geological Survey of Canada will have about 140 projects involving work north of 60°, and 55 of these will involve field work. As logistics will be shared in many of these projects, only about 30 actual field operations will be carried out.

Revision geological mapping in the Sheldon Lake and Tay River map-areas and the Dawson, Larsen Creek and Nash Creek map-areas will add to the knowledge base of the northern Cordillera in Yukon, and adjacent N.W.T. Stratigraphic and structural studies in the Nidderly map-area are directed toward a better understanding more about the facies relationship between lower Paleozoic basins and platforms. Detailed structural studies in the north central Yukon and near Norman Wells will attempt to resolve interpretations that were made during previous work, such as Operation Porcupine. Several paleontologists will continue their specific studies that provide the biostratigraphic control for the regional work.

The mineral resources of the northern Cordillera will be investigated by field studies of the metallogeny of those areas where revision mapping is in progress. This work will involve a detailed geochemistry of mineral occurrences and their host rocks, an examination of stratabound barite-base metal deposits, and an evaluation of the coal resources near Norman Wells.

Terrain mapping and study of the surficial material and landforms in the Mayo-McQueston, the Frances Lake, and Nahanni-Sheldon-Finlayson Lake map-areas will also provide data for land-use management and mineral exploration. Further paleoecological studies of fossil insects in the northern Yukon and the Tuktoyaktuk area will assist in understanding the Quaternary history of the area.

Geological field work in the Precambrian Shield area of Mackenzie and Keewatin territories will be concentrated in two main areas. South and east of Great Bear Lake, three field parties will be investigating the Wopmay Orogen and mapping at 1:250 000 and 1:100 000 scales. The Montessor River-Hay River, Aberdeen Lake and Deep Rose map-areas northwest of Baker Lake will be mapped at 1:250 000 scale, and support will be provided to a study of uranium metallogeny. Geological mapping at 1:250 000 scale will also be carried out in the Tinney Hills-Overby lake and the Hill Island Lake, map-areas. A regional metallogenic study of the northwest Canadian Shield, a study of the uranium metallogeny of the Bear-Slave geological province and an investigation of the surficial geology of north-central Mackenzie will be partly supported by the other field projects.

A preliminary investigation of a variety of areas in Mackenzie will be undertaken in order to establish a suitable site for long-term studies of geomorphic processes and the interrelation of geomorphology and surficial materials with vegetation.

One major field project will be carried out on southern Ellesmere Island with emphasis on stratigraphic and structural mapping of the Paleozoic strata, supported by biostratigraphy and petroleum geology studies. Another field study will investigate the stratigraphy, structure and petroleum geology of the Tertiary, Mesozoic and Upper Paleozoic of Axel Heiberg Island. This information will assist in reassessing the hydrocarbon plays in the Sverdrup Basin.

The field work on southern Ellesmere Island will include terrain mapping and a study of the surficial material and landforms. Mapping of the Quaternary geology of southwest Victoria Island will be completed by another field party. The study of the Quaternary geochronology of the Arctic Islands will involve lake coring and sampling of the bottom sediments and collection of surficial material in southern Baffin Island.

The possibility of future petroleum production from the Mackenzie Delta and offshore Beaufort Sea provides a focus for varied work in this area. Field examination of the lower Cretaceous strata in the Blow River and Herschel Island map-areas, and several paleontological and palynological studies are but part of a major program to provide a stratigraphic framework of the rocks of the area. The onshore and offshore environment and its relation to exploration, development and habitation are examined in detail by projects relating to the following: the processes involving permafrost and ground ice along the Mackenzie Valley and Arctic coast; the engineering properties of frozen soils, both onshore and offshore; the Quaternary stratigraphy near Tuktoyaktuk, Shingle Point and Nicholson Point; the testing of deep sounding electromagnetic systems; reflection and refraction seismic surveys in the Beaufort Sea to delineate permafrost conditions; marine surveys of the regional surficial geology and geotechnical properties of the seabottom in Beaufort Sea.

Mineral and fuel resource assessments will be carried out for proposed national parks in the East Arm-Artillery Lake area, and Bylot Island-Borden Peninsula. The continuing investigations of Canada's oil and gas resources will result in new or revised evaluations for the Arctic stable platform, the Arctic Folds Belt, the Mackenzie Delta and Beaufort Sea.

## National Museum of Natural Sciences

### Vertebrate Zoology Division

#### Responsibilities

The Vertebrate Zoology Division contributes to the knowledge of animal species in Canada through carrying out comprehensive faunal surveys and field research programs. The Division maintains important collections and does research in systematics, taxonomy, and zoogeography.

The Vertebrate Ethology Section carries out detailed, long-term studies of the behaviour of vertebrates, particularly birds and mammals. Since 1968, this Section has studied the relationships between species of Arctic animals and the behavioural adaptations that enable them to survive under high Arctic conditions. Most of the field research has taken place at the National Museum of Natural Sciences High Arctic Research Station at Polar Bear Pass on Bathurst Island, Northwest Territories.

#### Review 1982-1983

As part of Vertebrate Ethology's long-term investigation of Arctic gulls, the Section investigated several locations on Ellesmere and Baffin Islands in July and August 1982. Eight new colonies of Ivory Gulls on Ellesmere and three on northern Baffin were visited. Vegetation samples were collected at the nesting sites, and 13 Ivory Gulls were banded. New data on polynia utilization by Ross's Gulls and other nesting birds were acquired through a short helicopter survey.

The new film "Omingmak, the muskox", documenting the Section's studies of the behaviour of muskoxen on Bathurst and Ellesmere Islands, was completed and is now available commercially. Public distribution is awaiting funding. An exhibit of still photographs (same title and subject matter) toured western and northern Canada this year, with stops at Fort Smith, Yellowknife, and five museums in British Columbia, Edmonton, and Calgary.

An *Arctic Oasis*, a photographic display on the need for ecological reserves in the Arctic, continued its national and international showings. In 1982-83, this exhibit was shown in Ottawa, across the U.S., and in Norway, Finland and Belgium. This exhibit is one of many activities that led to the designation of Polar Bear Pass as the North's first National Wildlife Area.

#### Plans for 1983-1984

No new research is planned at Polar Bear Pass. Instead, work will be directed toward completing reports on several long-term research projects.

The muskox behaviour exhibit will travel to Alaska and begin its tour of Quebec and the Maritimes. *Arctic Oasis* will continue travelling in Europe.

### Paleobiology Division

#### Responsibilities

The Division collects Pleistocene vertebrate material from northern Canada and curates and describes it in an attempt to reconstruct the vertebrate history of the region during the ice age.

#### Review of 1982-83

Field work was carried out from July 10 to 26 in the Jesse Bay area, Banks Island, N.W.T. During that period, intensive collecting from organic deposits, evidently of pre-Sangamon interglacial age, yielded 46 large samples. They contained abundant plant macrofossils and will be screened for microvertebrate remains.

From July 30 to August 7, field work in the Dawson and Sixtymile areas of the Yukon Territory yielded many ice age vertebrate remains. Highlights of the Sixtymile collections were several rare specimens of camel and American lion bones. The research team also found a second bird specimen from Pleistocene deposits of the region.

#### Plans for 1983-84

During August, the Division will continue collecting ice age vertebrate remains in the Dawson and Sixtymile areas of the Yukon Territory.

## Division of Mechanical Engineering

### Hydraulics Laboratory, NRC

#### Review 1982-83

In conjunction with the Geotechnical Section of the Division of Building Research (NRC), the Hydraulics Laboratory has been measuring the mechanical properties of the ice in the rubble-field around Tarsiut Island. (Tarsiut Island is Gulf/ Dome's concrete retained island in the Beaufort Sea.) The tests included measuring ice salinity and its grain structure, uniaxial and confined (bi-axial) compressive strength, small beam flexural strengths and fracture toughness. The results were analysed and documented.

#### Plans for 1983-84

The main carriage, rack, and rails for the refrigerated model test basin in the Hydraulics Laboratory have been manufactured and are being installed. When the test basin is finished, it will be used for carrying out model testing of the dynamic interaction between an ice sheet and various structures. In particular, the indentation of a vertical indenter in an ice sheet will be studied in order to learn more about this problem. Two approaches - theoretical and modelling - will be used in this test program.

### Arctic Vessel and Marine Research Institute

#### Review of 1982-83

The Arctic Vessel and Marine Research Institute is becoming more involved in the design and study of vessels capable of operating safely and efficiently in ice-covered waters. During the past year, the Institute extensively investigated the performance of two ice-strengthened vessels - a Navigation Aids vessel and a coastal survey vessel. The survey vessel had been experiencing considerable rolling motion in some sea conditions. Certain modifications to the vessel had been proposed, but there was concern that they might add to its instability. Accordingly, the Institute was asked to investigate how these modifications, if they were carried out, would affect the ship. Investigations showed that after modification, a free surface anti-rolling tank would keep the ship's rolling motion within acceptable limits in beam seas.

Further studies have been conducted on the M.V. Arctic, an Arctic Class 2 ice-breaking bulk carrier. One objective was to establish correlation factors between the results of model experiments and those of field trials carried out over the past several years in a co-operative effort between government and industry. Also, at a request from industry, the Institute investigated how two different bow designs would affect the M.V. Arctic's hydrodynamic performance.

At the request of the Arctic Pilot Project, AVMRI investigated several designs for a twin screw Arctic class LNG carrier. After a preliminary series of model tests in which six bow and stern combinations were studied, the hull shape with the lowest power requirement was chosen, and it was tested in more detail later.

The Institute continues to study methods by which propellers can be protected from damage while operating in ice. Industry requested a project to investigate the hydrodynamic performance of a ship fitted with various devices for protecting its propellers. Resistance and propulsion experiments were conducted on a modified Arctic Class 7 icebreaker to predict performance with three kinds of propeller protection, ranging from complete protection to a system using only nozzles and skegs.

General ice research and engineering studies are also being conducted. Modelling theories for ships in ice are being studied, and icebreaking mechanisms are being investigated.

As in former years, AVMRI staff members continue to serve on various national and international committees and advisory boards. They make recommendations for standardizing both model and full-scale testing of ships in ice and help to establish standards and regulations for promoting marine transportation safety in Arctic sea conditions.

#### **Plans for 1983-84**

More Arctic vessel development, both in-house and by contract is planned for the coming year.

Construction of the Arctic Vessel and Marine Institute's new facilities in St. John's, Newfoundland is on schedule. Phase I, the office complex, is now complete, and Phases II and III, the Arctic, Clearwater and Stability Tank Laboratories are now under construction. They are expected to be completed in 1984. Major equipment items are being acquired, and contracts are expected to be issued shortly. New personnel are being recruited and trained in the Ottawa Laboratories.

#### **National Aeronautical Establishment/ Division of Energy R&D**

##### *Wind Energy Program*

A co-operative project to evaluate a 50 kW vertical axis wind turbine (VAWT) is proceeding under an agreement between the National Research Council and the Churchill Research Center. The prototype wind energy conversion system was commissioned in November 1981 and is connected into the local electricity distribution network at Churchill, Manitoba. By the end of 1982, the system had operated for about 2 000 hours and had generated about 25 000 kWh for the community. The installation is one of several across Canada aimed at evaluating the performance of the NRC-developed VAWT under the environmental and other conditions prevailing at the various sites. The unit continues to provide information on the applicability of current VAWT designs to northern climates.

There is considerable interest in the North in converting wind energy to electrical energy because of the high and increasing cost of diesel fuel. Enquiries for similar projects in Yukon and the Northwest Territories are being considered under the framework of the Federal/Territorial Agreement on Conservation and Renewable Energy Development and the Remote Communities Demonstration Program, and in conjunction with the Northern Canada Power Commission.

#### *Aerial Magnetic Reconnaissance*

This year's northern magnetic survey by NAE's Convair aircraft will take place in April 1983 over part of Greenland's Icescap and the waters between Greenland and Canada.

The Icescap survey area is a nearly parallelogram-shaped sector, bounded on the west by a 155 nautical mile length of the 50° meridian centered near Sondrestrom Air Base, and sloping southeasterly to its extremity straddling the eastern shore of Greenland. A straight survey line is positioned approximately mid-way between Greenland and Canada and extends from near the southern tip of Greenland, along Døir's Strait and Baffin Bay, to landfall on Ellesmere Island. The remaining over-water survey areas will be the Kane Basin and Kennedy-Robeson Channel between northern Greenland and Ellesmere Island.

The Icescap operation and a major portion of the Davis Strait/Baffin Bay survey line will be flown from Sondrestrom Air Base, and the remaining position of the survey will operate out of Thule Air Base. North and south-bound in-transit refueling stops will be made at Goose Bay, Nfld., and Frobisher, N.W.T.

#### **Canada Centre for Space Science**

##### *Review 1982-83*

The Canada Centre for Space Science (CCSS) supported two main programs at the Churchill Research Range in 1982-83. The first, WATERHOLE III, an aurora modification experiment, involved launching a Black Brant IX scientific sounding rocket and two smaller SUPER ARCAS rockets. The Waterhole project involved seeding the Earth's ionosphere with water molecules at an altitude of 300 km. An ionospheric "hole" nearly 50 km in diameter was formed, and the aurora was dimmed throughout the entire area.

The second program, SABRE, involved launching a Black Brant VIII sounding rocket to study the variation of tangential electric fields along an aurora arc using the technique of multiple barium release.

CCSS is proceeding with the CANOPUS project, a network of unmanned geophysical observatories. Site selection has been completed at 15 locations in the Northwest Territories and the northern parts of Saskatchewan, Manitoba, and Ontario. The network of observatories will automatically measure changes in the Earth's magnetic and electric fields, which are induced by solar particle precipitation.

#### Plans for 1983-84

Support for launching four scientific sounding rockets from the Churchill Research Range has been approved for 1983-84. Three of these will be for the International Research Council and one for NASA. Two Black Brant VIII sounding rockets will be launched as part of Project ARIES, an aurora modelling exercise. Another project called MARIE will involve launching a Black Brant X sounding rocket to study ion energization in the 500-1 000 km region. The NASA sounding rocket will be a Black Brant V to study the ionization, dissociation, and chemical reaction in the D- and E-regions of the atmosphere.

CANOPUS site preparation work will begin at seven of the stations during 1983. Instrument shelters will be installed and power lines extended. Instrumentation and construction will be completed at all sites during 1984.

#### Division of Building Research

##### Review 1982-83

The Division continued to provide assistance to the Canada Oil and Gas Lands Administration in evaluating the geotechnical aspects of exploration drilling operations in the Beaufort Sea. A marine geotechnical engineering program started, oriented toward the design of artificial islands for long-term production of hydrocarbons in the Beaufort Sea. This involved laboratory studies of the engineering properties of seabed soils and materials needed to construct drilling islands. Planning for model tests of underwater berms to investigate their stability during ocean storms and an investigation of equipment and test methods for measuring engineering properties in situ were undertaken.

Permafrost ground temperatures were measured at several sites in northern Manitoba and at Alert, N.W.T. Investigations were continued at several locations in the Y.T. and the N.W.T. to assess the long-term performance of insulated and uninsulated road and airfield embankments constructed on permafrost. Studies continued of bridge foundations at two locations on the Dempster Highway, Y.T., and of building foundations at Inuvik and Alert, N.W.T. Laboratory studies of the thermal and mechanical properties and the deformation behaviour of frozen soils and model piles in frozen ground continued. Laboratory research and numerical studies of frost action and the effects of frost heave on the operation of buried chilled gas pipelines in unfrozen areas of the discontinuous permafrost zone also continued.

Laboratory and field studies continued of saline ice characteristics and behaviour. The Division also investigated the influence of growth conditions on grain structure and salinity for first-year sea ice from Pond Inlet. Field measurements of the compressive strength of sea ice and its evolution from first-year to multi-year ice were carried out at Mould Bay. Observations of ice behaviour around a small island (Adams Island) at the intersection of Navy Board Inlet and Lancaster Sound began. Measurements were carried out around the caisson-retained drilling island at Tarsiut in the Beaufort Sea to determine the nature of ice interaction and its mechanical properties.

The Division began a laboratory program to assist Public Works Canada in a study of the strength of concrete exposed to low temperatures and sea water. The physico-mechanical characteristics of cement paste subjected to the same conditions were also studied. Assistance is being given to Energy, Mines and Resources Canada in the development of Northern Residential Standards for Energy Efficient Housing.

#### Plans for 1983-84

As part of the marine geotechnical engineering program in the Beaufort Sea, the Institute will carry out in situ tests at an abandoned drilling island in the summer, and at Tarsiut N-44 during the winter. The objective is to determine the characteristics of underwater berms that have been able to withstand the forces of winter ice and ocean storms. Soil samples will also be obtained for laboratory testing. A co-operative program with NRC's Hydraulic Laboratory will be undertaken to study the behaviour of model underwater berms subjected to wave action.

The foundations of various structures and facilities built on permafrost will be studied, and the interaction between floating ice and structures will be investigated in the field. The program of measuring permafrost ground temperature at various locations will be continued. Field observations and measurements of ice interaction will be continued at Adams Island.

Laboratory studies of frozen ground, frost action in soils, sea ice, multi-year ice and permafrost foundations will continue at about the same level. A laboratory program to study the strength and deformation behaviour of frozen saline soils will be initiated.

Many DBR research projects on the thermal and moisture performance of buildings in cold climates relate directly to the construction and use of housing and small buildings in the North. These projects will continue. Laboratory research will also continue on the strength of cement paste subjected to sea water and low temperatures.

#### Herzberg Institute of Astrophysics

##### Review 1982-83

As part of an international worldwide network program, the Institute continuously monitored cosmic ray intensities at Alert and Inuvik in the Northwest Territories. Data are sent regularly to the World Data Center for distribution to scientists.

#### Plans for 1983-84

The cosmic ray monitoring program will continue at the same level.

## Division of Chemistry

### *Review 1982-83*

Laboratory and theoretical studies of gas hydrates have been undertaken, with the aim of characterizing properties required for the exploitation of the natural gas hydrate deposits that occur in northern Canada. The thermal conductivity of methane hydrate has been found to be only one-fifth as great as for ice. The first calorimetric studies have been completed. Preliminary measurements of oxygen-18 enrichment in the water of gas hydrates suggest that the oxygen-18 rich water found in some geological sediments may be due to the recent presence of gas hydrates.

### *Plans for 1983-84*

Studies of the chemical and thermophysical properties of gas hydrates will continue.

## Transportation Research and Development

### *Responsibilities*

The Research and Development Directorate of Transport Canada's Strategic Planning Group plans and co-ordinates transportation research and development (R&D) in the federal government. In Montreal, the Directorate's Transportation Development Centre (TDC) carries out R&D projects in support of the Department's three operational administrations. As well, it carries out long-range, national projects and funds energy-related transportation R&D projects.

### *Review of 1982-83*

This was the first full year of the \$14 million, three-year (1981-82 to 1983-84) accelerated Arctic Marine R&D Program. The Canadian Marine Transportation Administration of Transport Canada co-ordinates and manages the Program, which was approved by Cabinet in June 1981. It is implemented jointly by Transport Canada, the Department of Fisheries and Oceans, and the Department of the Environment. The Program's objective is to promote safe, reliable year-round marine operations in the Canadian North.

In 1982-83, R&D funded through this Program was directed toward improving the design and operation of icebreakers by studying their propellers, propeller shafts and related equipment that can be damaged or interfered with by ice.

The Transportation Development Centre continued evaluating the ice-breaking bulk-cargo vessel MV Arctic, completing the data collection phase early in 1982-83. A master data package was developed that describes the instrumentation system of the ship and the acquired data base, as well as a methodology for ice load determination. A master program for the detailed analysis phase has been prepared and is being implemented.

Part of the MV Arctic scientific evaluation program, includes an investigation of steel properties and special steels and construction design for Arctic class ships. This work is intensifying. A new project was launched to study the characteristics of the refrozen 'track' left by the MV Arctic after it has made its way through the ice.

TDC continued investigating the problem of navigating in ice. The need to avoid (or at least minimize) ice damage led to four studies examining different approaches to detecting ice hazards electronically and avoiding collisions. The studies should lead to definition of a long-term R&D program in this area.

Development of an air cushion ice-breaking bow to improve the ice capabilities of existing ships was completed and tested at Thunder Bay. The tests showed that this technology significantly improves the performance of conventional ships.

In addition to carrying out Arctic vessel research, TDC completed the Arctic Snowmobile Technical Study. This work resulted in specifications for a more economical, reliable snowmobile for transportation in the North. TDC now is working with the Inuit Development Corporation to implement the results of the study.

A new TDC project this year was a study on the economic impact of northern transportation on the Inuit. Inuit organizations submitted a list of proposals for improving the Arctic transportation system. Their recommendations were supplemented by a consultant's report on transport costs.

Another new TDC project will provide conceptual designs and specifications for three types of marine survival capsules for use in Canada's coastal and Arctic waters.

Work began this year on developing an unattended navigation facility, to improve air-ground communication and navigation aids in Canada's Arctic and remote northern airspace.

The study of truck movements over ice sheet roads used during the winter months to cross frozen rivers and lakes in the North has been completed. A study of ice management in ports and harbours is under way.

Major strides were made in technology transfer and training in Arctic marine navigation. The Centre published a 'Bibliography on Ice Navigation Studies', a reference publication for owners, operators and designers of marine offshore ships and structures.

TDC, in consultation with the Canadian Coast Guard, is preparing to carry out long-range research into simulation-based methods of training ships' officers and crews to deal with problems encountered when manoeuvring in ice-covered water.

Major projects funded under the Energy R&D program in 1982-83 dealt with Arctic vessel requirements, including the development of ice detection and collision avoidance sensors. Other projects involved ice forecasting and hydrographic studies. Studies also began of navigation systems to support transportation for oil and gas development. In 1982-83, some 3.2 million of Energy R&D funding was devoted to studies related to Arctic transportation.

Environmental studies of the Atlantic near-offshore area began, and provision was made to carry out exploratory work in developing regulations for offshore drilling vessels.



# Culture and Recreation



# Department of Indian Affairs and Northern Development

## Environment Canada

### Northern Policy and Co-ordination

#### *Social and Cultural Development Division*

##### **Achievements 1982-83**

Contributions totalling \$2.2 million were provided to the Inuit Broadcasting Corporation (I.B.C.) and Taqramiut Nipingat Inc. (T.N.I.) to continue producing Inuktitut television programs. By March 1983, both were producing approximately eight hours of Inuktitut programming.

Three issues of Inuktitut magazine were published including a special issue on the Western Arctic.

Work on a major Inuktitut dictionary continued, and the Department sponsored workshops on Inuktitut terminology and Inuit music in co-operation with the Inuit Cultural Institute (I.C.I.).

##### **Plans for 1983-84**

Support of Inuit television and broadcasting will continue with emphasis placed on increasing the quantity of Inuktitut programming. Specialized Inuktitut lexicons and a comprehensive Inuktitut-English dictionary for Inuit translators will be published in co-operation with the Government of the Northwest Territories and Inuit cultural associations. Projects supporting Inuit literature and music will continue. Inuktitut magazine will publish special issues on Inuit language and broadcasting to commemorate the World Communications Year.

### Parks Canada

#### **National Parks Activity**

##### **Responsibilities**

National Parks evaluates geographical areas to determine their potential as national parks and landmarks and manages existing national parks.

##### **Review of 1982-83**

##### *New Park Studies*

Parks Canada has identified preliminary "Natural Areas of Canadian Significance" (NACS) in each of the 15 natural terrestrial regions lying mainly in the Territories. One national park and three national park reserves are located in the Territories. The reserves are to receive full park status, pending settlement of native land claims. In addition, three land areas have been withdrawn under the Territorial Lands Act for future park purposes.

Parks Canada, Prairie Region, has established a district office in Yellowknife, which is responsible for planning new national park proposals.

##### *Northern Yukon*

In 1978 as part of the COPE Agreement-in-Principle, 38 850 km<sup>2</sup> were withdrawn for park use and conservation purposes. A final assessment of non-renewable resources has been completed. Negotiations for a final agreement between COPE and the federal government have begun.

A marine support facility prepared by Gulf Canada at Stokes Point was assessed and found to be incompatible with national park and wilderness values.

##### *Northern Ellesmere*

In February 1982, a Memorandum of Understanding to establish a national park reserve of approximately 30 000 km<sup>2</sup> was signed. Since then, the Department has developed interim management guidelines and a socio-economic action plan for the proposed park reserve.

##### *Northern Baffin Island (Bylot Island/Eclipse Sound)*

In the fall of 1982, the community of Pond Inlet indicated that it wished to postpone further discussions of this national park proposal pending resolution of the Lancaster Sound Planning exercise.

##### *East Arm Great Slave Lake*

An assessment of non-renewable resources in the area of this proposed national park was initiated and will be completed in the summer of 1983. It will provide the basis for establishing boundaries of a national park reserve.

##### **Plans for 1983-84**

Further work will be done on the terms and conditions of the Northern Ellesmere Memorandum of Understanding. Public consultation will begin in 1983 to review the terms and conditions for establishing a national park reserve.

A mineral and energy resource assessment of lands in the area of the proposed North Baffin Island/Bylot national park is to be completed in 1983.

A renewable resource inventory of lands withdrawn for a National Park on the East Arm of Great Slave Lake will be undertaken and assessed for terms of impact on final park boundaries.

##### *Federal/Territorial Parks Consultative Committees*

##### **Review 1982-83**

The Parks Canada/Yukon Consultative Committee met in January 1983. Items discussed at the meeting included the status of the Canadian Heritage Rivers Program, the Northern Yukon Park proposal and the establishment of a Territorial park in the area of Kluane National Park.

The N.W.T./Parks Canada Consultative Committee met in Yellowknife in December 1982 to discuss the new park proposals for the N.W.T. and concerns over establishing parks and park reserves. Other discussions involved the planning of existing National Parks and cultural and historic matters.

## Nahanni National Park Reserve

### Review 1982-83

Parks Canada participated in a South Nahanni Watershed Study meeting to provide co-ordination and direction to studies in the Nahanni basin. DIAND agreed to undertake a lead role in developing general operating guidelines.

Draft reports from a two-year DIAND-initiated Nahanni Overview and Planning Study were reviewed. Of concern to Parks Canada are interim management guidelines and measures to protect the park from the environmental effects of developments in the South Nahanni Watershed.

Parks Canada began discussions with Inland Waters Directorate about investigating the quality of water in Nahanni National Park.

Parks Canada provided partial funding to Lands Directorate for a one-year mapping study in the Mackenzie Mountains area, including Nahanni National Park.

A Resource Description and Analysis as part of the Parks Canada Natural Resource Management Process was completed for Nahanni.

The Park experienced one of its worst fire seasons in 1982. Fires caused by lightning burned 8 000 hectares of land. A Memorandum of Agreement was signed with DIAND to provide fire prevention and firefighting services in Nahanni National Park Reserve.

### Plans for 1983-84

Parks Canada will continue to participate in regional planning activities in the South Nahanni River Watershed. The development of interim management guidelines and the establishment of an agreement with DIAND to ensure the protection of Nahanni National Park from upstream developments will be the primary objectives of Parks Canada. Water quality will also be investigated.

A bear management plan will be prepared for Nahanni Natural resource studies will be conducted to evaluate bear habitat in Nahanni and to analyse the Park's ungulate data base.

Orientation and information services provided by Parks Canada for a Government of the Northwest Territories visitor centre at the Blackstone River will be completed.

## Wood Buffalo National Park

### Review 1982-83

The announcement by Alberta to pursue the hydro-electric potential of the Slave River adjacent to Wood Buffalo National Park caused Parks Canada to focus its efforts in this area. In 1982-83, activities included participation in the Departmental review of draft Environmental Impact Statement guidelines and public hearings held by the FEARO Panel in the project area. Parks Canada also provided significant input to the Departmental position.

There were 53 fires in Wood Buffalo National Park. The area burned was about 670 hectares.

### Plans for 1983-84

Parks Canada will continue to monitor the progress of the proposed Slave River Hydro Project. Future involvement will be governed by Alberta's announcement of either a proponent or a development schedule and the proponent's Environmental Impact Statement.

When the Wood Buffalo National Park Management Plan has been approved, Parks Canada will begin preparing a Conservation Plan as part of the Park Natural Resource Management Process.

A bear management plan will be prepared for Wood Buffalo National Park and a review of Parks Canada's bison research program will be completed for use in preparing a bison management plan.

An exhibit at Pine Lake will interpret the origin of Pine Lake and provide information to visitors on trail and road access to the Slave Plain region. Work will begin on a new Park Administration/Visitor Reception Centre.

## Kluane National Park Reserve

### Review 1982-83

Detailed plans for developing the Slims River access corridor in the park reserve were completed. An agreement-in-principle was reached with the Council of Yukon Indians on land selection and other conditions for settling park-related land claims of the Champagne/Aishihik and Burwash Indian Bands.

### Plans for 1983-84

Work on the \$4-million Slims River access corridor will begin, and the project will open to the public in 1985.

A five-year natural resource management program will begin for Kluane. It will involve the preparation of a Park Data Plan, a Resource Description and Analysis and a Park Conservation Plan.

In 1983-84, a bear management plan will be prepared for Kluane National Park.

Interpretive signs for the Alaska Highway will be installed to orient visitors to important park features.

## Klondike National Historic Sites (KNHS)

### Review 1982-83

A strategy for carrying out the Master Development Plan was completed. The strategy focuses on all KNHS capital development being completed over the next 10 years. Restoration of the Northwest Mounted Police married quarters and St. Andrews Manse was completed. The Administration Building was also renovated extensively.

### Plans for 1983-1984

Planning and design will begin on two exhibits- an outdoor exhibit of mining equipment and techniques, and another on restoring the Dawson Daily News Building. The Robert Service Cabin will be restored. The Northwest Mounted police Fort Herchmer area will be landscaped, and visitor access and interpretation will be provided. A visitor centre jointly operated by Parks Canada and the Yukon Territory will be opened during the summer of 1983.

## Proposed Chilkoot Trail National Historic Park

### Review 1982-83

Negotiations were successfully concluded with officials of B.C.'s Heritage Resource Branch on an agreement whereby Parks Canada would acquire about 200 sq. km<sup>2</sup> of land in the northwest corner of the Province.

### Plans for 1983-84

Preparation of a management plan for the Chilkoot Trail park will begin as soon as a final agreement has been signed with British Columbia.

# Health and Welfare Canada

# National Museums of Canada

## Arctic Winter Games 1984 - Yellowknife

In March 1984, the Arctic Winter Games return to Yellowknife. The City hosted the first of these games in 1970.

The Games are held every second year and rotate among the three participating jurisdictions - Yukon, the Northwest Territories, and Alaska. They consist of traditional events such as curling, volleyball, figure skating, snowshoeing, hockey, badminton, judo and gymnastics, but also include typically northern events such as one-hand reach, high kick, air-plane and snowshoe biathlon.

Though the games have made northern athletes more competitive, games organizers emphasize the importance of mass participation and the social aspects of the occasion.

Fitness and Amateur Sport will provide \$250 000 to assist with organizing and operating the 1984 Arctic Winter Games in Yellowknife.

## National Programs

### Canadian Conservation Institute

#### Responsibilities

The Canadian Conservation Institute (CCI) of the National Museums of Canada helps publicly-owned museums, galleries, and archives to protect their collections against deterioration. CCI combines scientific research with applied conservation techniques in its laboratories in Ottawa and operates mobile laboratories across Canada. As well, the Institute provides advice on all matters from the care of artifacts to maintaining proper environmental conditions within institutions. It offers free lectures, workshops, and seminars.

#### Review 1982-83

The CCI Archaeology Division, along with archaeologists from the Prince of Wales Northern Heritage Centre in Yellowknife, surveyed the proposed territorial park along the old Canol Road (between Norman Wells and Macmillan Pass) to assess the condition of the artifacts and advise on conservation.

On Dealy Island, CCI and DIAND participated in a major site-stabilization project directed by the Government of the Northwest Territories. Archaeological material is now being treated both at the Prince of Wales Northern Heritage Centre and at CCI.

Conservation treatment of 68 water-logged organic objects from a Thule house on Herschel Island, Yukon, is now being carried out in the CCI Archaeology Division Laboratory.

#### Plans for 1983-84

Work on the scientific examination and conservation of artifacts composed of organic materials and recovered from excavations at Dealy Island will continue at the headquarters laboratory. CCI will continue to advise museum personnel in both Yukon and the Northwest Territories concerning the proper care, handling, display and storage of their collections.

## Museum Assistance Programs

### Responsibilities

The Museum Assistance Programs provide financial and technical assistance to Canadian museums and related institutions. The programs' objectives are, first, to help these organizations to preserve the objects and collections that form Canada's natural, cultural and technological heritage and, second, to increase public access to these materials. These programs provide different kinds of assistance. Specifically, help is available to register collections; train museum personnel; prepare, produce and circulate exhibitions; employ conservators; purchase equipment; and upgrade facilities. Assistance is also available for planning and special projects, and for public programming activities of Associate Museums and National Exhibition Centres.

#### Review of 1982-83

A grant of \$20 000 was awarded to the Northern Life Museum and National Exhibition Centre at Fort Smith for 1982-83 public programming activities.

A grant of \$23 000 was awarded to the Prince of Wales Northern Heritage Centre in Yellowknife. The Centre will put this money toward registering its fine and decorative arts collection.

#### Plans for 1983-84

A grant of \$20 000 has been committed towards the 1983-84 public programming activities of the Northern Life Museum and National Exhibition Centre in Fort Smith.

A final payment of \$6 000 has been committed to a project for registering the fine art at the Prince of Wales Northern Heritage Centre in Yellowknife.

## National Museum of Man

### Canadian Ethnology Service

#### Responsibilities

The Canadian Ethnology Service documents the cultural heritage of the aboriginal peoples of Canada. This work includes carrying out research, building collections, and analysing and distributing information on the ethnographic, linguistic and material culture of the Indian, Inuit and Métis peoples of the Yukon and Northwest Territories.



**Dogrib Athapaskan Garter**  
Two rolled pieces of tanned caribou-skin, stitched with sinew and covered with white, orange, and dark-brown porcupine quills. Fringe of tanned caribou-skin thongs wrapped with porcupine quills. 35.5 cm (14 in)  
Dogrib Indian, Great Slave Lake, District of Mackenzie  
Speyer Collection, before 1840 (NMM VI-E-110)  
Ref.: Benndorf and Speyer, no. 22  
Credit: National Museums of Canada

### Review 1982-83

A long-term study of Arctic kayaks was terminated. However, work continued on investigating traditional Athapaskan land use, subsistence patterns, Athapaskan-Inuit interrelationships and Inuit material culture. Research projects contracted through the Urgent Ethnology Contracts Programme included: a study of Inuit tales pertaining to the legendary Tuniit people; continuation of research on kinship among the Inuit of East Baffin Island; collection of Inuit oral history of whaling activities in Hudson Bay and Hudson Straits; a study of the traditional clothing of the Chipewyan, Beaver, Slave, Yellowknife, Dogrib, Hare, Sekani, Nahanni and Kutchin in Dawson Creek, Whitehorse, Burwash Landing, Dawson City and Fairbanks; a syntactic investigation of the pronominal system in Dogrib linguistics in the vicinity of Yellowknife and Rae Edzo; continuation of research on Dogrib as spoken in Lac LaMartre, N.W.T.; and a comparative study of traditional styles of Athapaskan beadwork in Fort Yukon, Old Crow, Fort McPherson, Whitehorse, Fort Simpson, Yellowknife, Hay River, Fort Smith and Fort Chipewyan.

### Plans for 1983-84

Long-range staff research into Athapaskan land use and housing is scheduled for completion. Two major publications are currently in draft form and will be published at the end of the fiscal year. In the Eastern Arctic, staff research will concentrate on investigating the material culture of the Labrador Inuit. Field contract research will focus on oral accounts of traditional Inuit whaling activities.

### Archaeological Survey of Canada

#### Responsibilities

The Survey undertakes research and rescue archaeology pertaining to the prehistoric occupation of Canada.

#### Review 1982-83

Two brief surveys in the northern Yukon interior and an archaeological impact assessment survey of Stokes Point and vicinity on the Yukon Coastal Plain were made possible by the support of the Polar Continental Shelf Project (PCSP). It provided a Bell 206 helicopter and support at the Tuktoyaktuk PCSP base.

An aerial survey of the 1982 Dempster Highway-Old Crow winter road was surveyed from the air by J. Cinq-Mars and R. McGhee. The party followed the Old Crow winter road across the Eagle Plain, the Porcupine Plateau and the Bluefish Basin. J. Dixon (University Museum, Alaska) joined the party for a brief visit to the Bluefish Caves.

Bad weather limited work on the Yukon Coastal Plain to two days. At the request of the Yukon Department of Tourism, Heritage and Cultural Resources, a survey was carried out by J. Cinq-Mars and D. Clark. It consisted of a detailed ground examination of the Stokes Point area and aerial surveys and minimal ground checks of surficial features along the Beaufort Sea littoral between Stokes Point and Whitefish Station. A brief reconnaissance was made in the foothills to the west of Trail River.

# Secretary of State

An archaeological reconnaissance was made by D. Morrison of the middle Lockhart River system in the area north and east of Great Slave Lake. Forty-seven sites were found or revisited. Almost all were surface sites pertaining to the Dene prehistory of the last 2 500 years (Taltheilei Shale tradition). The stratified Thanakoi site was tested, and revealed Pre-Dorset and Shield Archaic components as well.

R. McGhee carried out a brief assessment survey along the Beaufort Sea coast between Mackenzie River and Cape Bathurst. The survey conformed that coastal erosion had been severe throughout most of this area, removing most traces of aboriginal occupation. A few previously unknown sites were found, including one in Harrowby Bay.

## Plans for 1983-84

In the next field season, J. Cinq-Mars will carry out more excavations at the Bluefish Caves and conduct inventory surveys along the Yukon Coastal Plan, between Stokes Point and King Point. D. Morrison will carry out surveys in the general area of the southern Mackenzie Delta and the lower Peel and Arctic Red rivers. Finally, R. McGhee will begin excavating the newly discovered Harrowby Bay site.

## Citizenship Program

### Responsibilities

The Department's offices in Yukon and Northwest Territories receive requests from voluntary associations for technical advice, assistance and grants to support various community activities. For example, the Department encourages Native groups to participate in the North's changing society, while preserving their own cultural heritage. The Department is also concerned with preserving both the rights of official language minority groups, and their cultural identity within their communities. The Department also promotes the development of special projects for meeting the special needs as identified by native people.

### Review 1982-83

Program services for the Northwest Territories were administered through an office in Yellowknife, reporting to the Alberta Regional Office. Through the *Native Citizens' Program*, technical and financial support was provided to native organizations, native women's groups, friendship centres, communications societies and social and cultural development projects. The Program also assisted in bringing film and slide productions to remote communities. The *Multiculturalism Program* supported projects in areas such as writing and publications, language teaching aids for Inuit and Indian groups, Canadian Ethnic Studies in Native affairs and Inuit music, and performing and visual art productions.

Alberta Regional staff responsible for Official Language Minority Groups provided technical and financial assistance to the Association culturelle francoténoise located at Yellowknife, N.W.T. This group supports the social and cultural development of the French-speaking community in the area. The Department also supported the Yellowknife chapter of Canadian Parents for French.

The Quebec Regional Office continued to work closely with native groups in northern Quebec.

Program services for the Yukon Territory were administered through an office in Whitehorse, reporting to the Pacific Regional Office in Vancouver. During the year, the office was active with native, ethnocultural, francophone and women's groups, as well as with other community associations. Regional staff responsible for Official Language Minority Groups have continued to assist the developing

Franco-Yukon citizens group and the Yellowknife group working to strengthen the Yukon chapter of Canadian Parents for French.

## Plans for 1983-1984

The Department will continue to offer financial, technical and professional services to groups in Northern communities. Such groups include native groups, official language minority groups, ethnocultural groups, women's groups, and other community associations whose objectives are consistent with Departmental objectives and priorities.

The Department will continue to encourage youth exchanges through its Open House Canada Program.

It is expected that Official Language Minority Groups staff in the Pacific and Alberta Regional Offices will provide increasing technical support in Yukon and the Northwest Territories during the coming year.

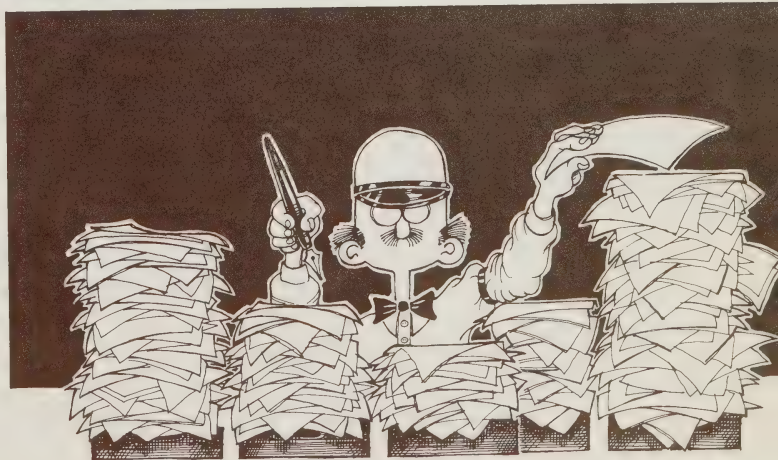
## Human Rights Directorate

The Human Rights Directorate operates secretariat for the Continuing Federal-Provincial-Territorial Committee of Officials Responsible for Human Rights. This Committee provides a mechanism for liaison and consultation in matters relating to Canada's international human rights commitments. Yukon and the Northwest Territories regularly send official representatives to the Committee's twice yearly meetings.

The Secretary of State serves as Chairman of the Federal-Provincial-Territorial Ministerial Conference on Human Rights. Representatives from both Yukon and the Northwest Territories attended the last conference held in February 1981.

The Human Rights Directorate operates the secretariat for the Ministerial Conferences. The next Ministerial Conference is being planned for September 1983. Currently, the Committee of Officials is studying certain areas of concern and interest to Ministers. These include: affirmative action and related special support programs; emerging rights and possible new proscribed grounds of discrimination; mechanisms for monitoring legislative compatibility with the International Covenants; and developing a common Canadian interpretation of the International Covenant on Civil and Political Rights.

# General Government Services



# Agriculture Canada

# Department of Fisheries and Oceans

# Department of Indian Affairs and Northern Development

## Farm Income Services Branch

Programs are available to producers in the Northwest Territories and the Yukon Territory under the Agricultural Stabilization Act (ASA), the Agricultural Products Board Act, and the Agricultural Products Board Act. One deficiency payment has been made to a farmer in the Yukon since the inception of the ASA.

## Native Affairs Branch (Headquarters)

### **Responsibilities**

The Native Affairs Branch provides a departmental focal point for policy development, program co-ordination and advice for the Minister, Senior Management and Regional Directors-General on all native-related issues that impinge on the Department's mandate. In addition Branch personnel also function as departmental representatives on government teams negotiating the settlement of native comprehensive land claims.

### **Review 1982-83**

The Branch represented departmental interests on negotiating teams working to settle claims by the Council for Yukon Indians (CYI), the Committee for Original Peoples' Entitlement (COPE) and the Inuit Tapirisat of Canada (ITC). Branch staff also provided input to the Constitutional Conference on native rights in March, 1983.

### **Plans for 1983-84**

Work on land claims is expected to peak as the Dene comprehensive land claim negotiations get underway and those with the CYI, COPE and ITC move toward final agreements. The Branch will play a lead role in clarifying native rights that will likely result from the Constitutional Conference of March 1983.

## Northern Affairs Program

### **Responsibilities**

Northern Affairs program include activities related to the management of northern resource development, the protection of the environment, the preservation of native languages and cultures, and the political evolution of the northern territories.

## Northern Policy and Co-ordination Branch

This Branch co-ordinates the federal and Territorial policies and programs affecting the North. In addition, it has responsibilities for developing and evaluating policy for northern research, and for special social, cultural and economic development programs for northern Inuit.

## Northern Policy Directorate

### **Responsibilities**

The Northern Policy Directorate provides a strategic framework within which policies for the North are developed to ensure that they are consistent with the government's broad objectives for the North. The Directorate comprises three Divisions, which are listed below, along with their respective responsibilities.

### *Policy Division*

The Policy Division identifies emerging policy issues and develops related policy options and recommendations. Each year it also publishes "Government Activities in the North" and "Annual Northern Expenditure Plan".

### *Native Claims Division*

Formed early in 1982, the Division co-ordinates program inputs to the Native land claims negotiation process and provides advice to management on the policy, program and operational implications of concessions made to native groups.

### *Parliamentary and External Relations Division*

This Division co-ordinates the Northern Affairs Program's support of the Minister's Parliamentary responsibilities by providing background information to assist him in answering to Parliament. It also prepares issue-related briefings for use during Cabinet Ministers' northern visits.

The Division also plans, organizes and conducts tours of the North for Cabinet Ministers, Senators, foreign dignitaries, senior government officials, and members of the media.

### *Norman Wells Project Co-ordination Office*

#### **Responsibilities**

The Office is responsible for co-ordinating all programs and activities associated with the construction and operation of the Norman Wells Oilfield Expansion and Pipeline Project in the N.W.T. and manages all departmental programs relating to the Norman Wells Project.

#### **Review of 1982-83**

This year is the second of a five-year federal funding program that received approval in principle when Cabinet approved the Norman Wells Project on July 30, 1981. The Office co-ordinated activities for the Project and liaised with other federal departments and agencies, the Government of the Northwest Territories (GNWT), the Dene Nation and Métis Association of the Northwest Territories (MANWT) and the sponsors of the Project - Interprovincial Pipeline (NW) and Esso Resources Canada Ltd.

A regional office was established in Yellowknife, with a district office in Fort Simpson to oversee pipeline construction activities.

#### **Plans for 1983-84**

Construction work on the mainline pipeline and artificial islands will begin. This is the third year of funding for the Norman Wells Project. Activity should shift from Headquarters to the regional office as construction monitoring begins. Liaison with other federal departments, the GNWT, the Dene Nation and MANWT, and the sponsors will continue.

### *Public Review Division*

#### **Responsibilities**

The Division is the focal point for the Northern Affairs Program's involvement in public assessment and review of major development proposals north of 60°. The Division co-ordinates assessment and review activities within the Department and between the Department and other federal departments and agencies, the Territorial Governments, and northern and native groups. It also provides intervenor funding to enable these groups to participate in the public review process. The Division maintains a documentation centre that contains a variety of information relating to major northern development proposals and of interest to the public. The Division co-ordinates the Department's responsibilities relating to the Alaska Highway Gas Pipeline and the Arctic Pilot Project (APP).

#### **Review of 1982-83**

National Energy Board (NEB) hearings into the APP continued into October. At that time, they were postponed by the NEB, pending supply contracts for the APP's natural gas. Liaison was maintained with the NEB, and daily summaries of the proceedings were prepared. Participation in the Arctic Pilot Project Working Group also continued.

The Departmental assessment and review of the Beaufort Sea Development Environmental Impact Statement (EIS) was co-ordinated, and preparations were made for the upcoming Environmental Assessment and Review Process (EARP) public meetings. Departmental participation in the EARP draft EIA guideline public meetings on the proposed Slave River Hydroelectric Development was also co-ordinated, and daily summaries of

the proceedings were prepared. Liaison was maintained with the Federal Environmental Assessment Review Office (FEARO) concerning both EARP reviews.

Intervenor funding was provided to northern and native groups to prepare for and participate in the Beaufort Sea - EARP and APP - NEB reviews. The Department provided FEARO with funds for the Beaufort Sea EARP. Funds were disbursed through an Independent Funding Committee established by FEARO in consultation with the Department, while APP - NEB funding was handled directly. With FEARO, the Division co-sponsored of the intervenor funding program for the Beaufort Sea - EARP.

New materials dealing with the Slave River Hydroelectric Development and the Beaufort Sea Development EIS were added to the documentation centre. Transcripts and other materials generated by the APP - NEB, the Beaufort Sea - EARP and the Slave River - EARP reviews were also incorporated.

The Alaska Highway Gas Pipeline activities were postponed with the announced two year delay in construction start-up. However, there were a number of items to be carried forward in relation to this project.

#### **Plans for 1983-84**

The APP - NEB and Beaufort Sea - EARP reviews will continue into 1983-84. The Division will co-ordinate the Department's response to the recommendations resulting from these reviews.

The EARP Panel will release guidelines for preparing the Slave River Hydroelectric Development EIS so that work can start on the Statement. A new application is expected from Polar Gas to build a natural gas pipeline up the Mackenzie Valley with later connections to the Arctic Islands. The Division will consider the implications of the Slave River Hydroelectric Development and Polar Gas proposals in terms of public interest. Additional proposals (including a Beaufort Sea Oil Pipeline proposal) to transport northern energy resources from the Arctic are also expected.

### *Territorial Relations Division*

The Northwest Territories held a plebiscite in April 1982 on the question of division of the Territories. Division was supported by a majority of voters. A Constitutional Alliance was formed, endorsed by the Legislative Assembly and made up of representatives from the four N.W.T. native groups and the Legislative Assembly. The Alliance is divided into two forums, the Nunavut and the Western Constitutional Forums. Each meets separately, but it is understood they will come together as an Alliance when negotiations for a new boundary begin with the federal government.

Cabinet rendered its decision on DIAND's Comprehensive Paper on Political Development in the North in November 1982. The federal government is prepared to accept in principle the division of the Northwest Territories. Acceptance is contingent both on settling comprehensive land claims, and on forging a consensus among northerners on such crucial issues as boundaries, future locations of any new administrative centres, and the distribution of powers among local, regional and territorial levels of government.

The federal government has also renewed its longstanding commitment to more responsible government. Accordingly, the Yukon Act will be amended as soon as native claims have been settled. The amendments to the Act will confirm in law the steps already taken toward achieving responsible government in Yukon.

A formula-based approach to providing federal financial support to the Territories will be introduced to allow improved fiscal planning and to enable northern governments to assume full accountability for their budget decisions.

To further strengthen the Territorial Governments and help them deal with related costs of resource development, the federal government has committed itself to giving the Territories a certain level of discretionary revenue. Specific proposals will be worked out in the near future.

### **Review of 1982-83**

The Division continued to monitor the progress of constitutional development in the two Territories.

Responsibility for Information Services and Public Works was turned over to elected members of the N.W.T. Legislative Assembly from the Territorial administration. Responsibility for operating the Frobisher Bay hospital was transferred by National Health and Welfare to the N.W.T. Government. The Division participated in an internal Intergovernmental Task Force with NH&W and GNWT. The Task Force was formed to examine methods to improve the co-ordination of health delivery services in the Northwest Territories.

### **Plans for 1983-84**

The Division co-ordinated the preparation of Federal-Territorial Financial Agreements covering fiscal year 1983-84 for both Territories.

### *Financial Agreements 1983-1984*

<i>Yukon Territory</i>	<i>(\$000)</i>
Operating Grant	72 809
Capital Grant	26 784
Loans	Nil
<i>Northwest Territories</i>	
Operating Grant	266 489
Capital Grant	79 504
Loans	Nil
<i>Additional Financial Assistance (outside agreements)</i>	
<i>Yukon Territory</i>	
Hospital care of Indians & Inuit	800
Medical care of Indians & Inuit	200
Low income rental purchase housing	208
<i>Northwest Territories</i>	
Hospital care of Indians & Inuit	6 517
Medical care of Indians & Inuit	900
Low income rental purchase housing	-

### **Northern Resources and Economic Planning Branch**

#### *Mining Management and Infrastructure*

During the past year, the Northern Affairs Program reviewed its mandate and was reorganized to reflect current program objectives and government priorities. Within the Northern Affairs Program, the Northern Resources and Economic Planning Branch was reorganized with the creation of three new Directorates – the Northern Economic Planning Directorate, the Oil and Gas Management and Project Development Directorate, and the Mining Management and Infrastructure Directorate. The last was formed to provide a better focus for considering issues related to the mineral industry, because of the importance of mining in the North. It also recognizes the important links between mineral activities and infrastructure development.

Within the Mining Management and Infrastructure Directorate, three new Divisions were created: the Mineral Policy Division, the Mining Administration Division and the Infrastructure Division. The Directorate is responsible for functions similar to provincial departments of Mines and Transportation. It formulates policies; drafts legislation and regulation to promote orderly management and development of mineral resources in the N.W.T. and Yukon; assesses the technical, economic, financial and social effects of mineral projects; and liaises with the mining industry and other interested parties. In the field of transportation, it formulates transportation and communication policies; develops programs; and assesses transportation needs (including roads and airstrips) for economic development in the North. The Directorate provides functional direction on all mineral related matters to DIAND regional offices and to senior departmental, interdepartmental and Territorial officials, the mineral industry, and labour and native organizations. It also carries out mining administration functions.

## Mineral Policy Division

### Responsibilities

The Mineral Policy Division develops policies to encourage exploration for, and orderly development of, mineral resources in northern Canada. It carries out both short-term and comprehensive studies of the economic, financial, and socio-economic impacts of mineral development and monitors mining projects to ensure that government objectives, as stated in the agreements with industry are achieved. Finally, the Division conducts basic research on mineral issues and advises senior management in the development of non-renewable resources in the North.

### Review of 1982-1983

Depressed world markets and low metal prices severely affected the northern mineral industry in 1982. As a result, a major effort was made to find ways to revitalize the mining industry and alleviate the adverse effects of mine closures. After the Cyprus Anvil mine closed in June 1982, a comprehensive analysis was carried out to determine the causes for this shutdown and its implications for the Yukon economy. DIAND is working closely with the Company and others to explore possible ways of reopening the mine as soon as possible.

On January 2, 1983, the Pine Point mine temporarily closed. The Company is working with the railroads, NCPC and its staff and union employees to reduce costs, which will help to reopen the mine. Discussions involving officials of CEIC, MR and IAND, have been held to determine what assistance can be made available to the Company under Section 38 of the Unemployment Insurance Act and the EED program.

Monitoring of major mining projects such as Polaris and Nanisivik continued. Future options for the Nanisivik project were analysed. This work included evaluating the government's equity interest as well as examining other uses for the mine site when the mine closes.

The Division participated in assessing the Cadillac mining project. A commercial viability study is being conducted. Terms of reference for a socio-economic impact study are being developed.

The mining cash flow model (CASHSIM) was modified to allow more flexibility in entering data.

The Division was involved in developing terms of reference for the North Canol Road Cost Benefit Analysis and in assessing the consultant's report.

Advice was provided to the Indian Program of DIAND on the involvement of the Ross River band in the Yukon barite mine proposal.

The preliminary phases in the development of a northern mineral policy were completed. Consultations were held with governments, industry, native organizations and organized labour to help ensure that all major issues relevant to northern mineral development over the next decade will be addressed. The need to allocate additional resources to meet the current crisis in northern mining has delayed the policy completion date.

### Mining Administration Division

#### Responsibilities

The Mining Administration Division, Headquarters, administers the royalty provisions of the Yukon Quartz Mining Act, Canada Mining Regulations and Territorial Coal Regulations. It also recommends amendments to existing regulations after consultation with industry and regional offices of DIAND.

The Mining Administration Division is responsible for developing policies and initiating the drafting of regulations and legislation relating to administering and disposing of mineral rights in Yukon and the Northwest Territories. The Division advises various government agencies on current and proposed exploration and mining developments and maintains a microfiche library of assessment reports, geological reports and other mineral resource information. The Mining Administration Division consists of the Mining Lands Section and the Mining Resource Section in Ottawa, and it provides functional direction to DIAND regional offices on regulatory and legislative matters.

#### Mining Lands Section

The Mining Lands Section has drafted amendments to the Canada Mining Regulations and is finalizing amendments to the Territorial Coal Regulations.

#### Mining Resources Section

Its prime concern is determining regional potential for specific minerals and assessing the potential of various areas in the Territories for different kinds of land use, parks, possible land claims, and transportation routes and power developments. This Section (and the Mining Administration as a whole) informs and advises the Minister on current and proposed mine and exploration developments in the North. It also produces Monthly Mines and Mineral Statistics and annual reports on Mines and Mineral Activities.

### Regional Branches - Yukon and Northwest Territories

The Yukon Region Branch and Northwest Territories Region Branch of the Northern Affairs Program are major functional groups under the direction of regional Directors General. The Regional Branches administer the mandate of the Program within the respective Territories. Offices are centered at Whitehorse, Y.T. and Yellowknife, N.W.T.

The Regional Branches have the following sub-units: The Mining Recording Section, The Geological Surveys Section, and The Mine Inspection Section (Yukon Region only).

## Mining Recording Section

The Mining Recording Section provides mining record services in both Territories. For administrative purposes, the Territories have been divided into seven mining districts. A mining recording staff is responsible for the disposition of mineral rights within each district in accordance with legislation. A Supervising Mining Recorder in each Territory ensures that uniform practices are observed in the administration of the various mining acts and regulations.

## Geological Services Section

This Section provides geological services to the mineral industry in both Territories. Offices are maintained at Whitehorse and Yellowknife. Two core libraries – the H.S. Bostock Library in Whitehorse and the C.S. Lord Library in Yellowknife – preserve diamond drill core samples.

Each office has a large library of published and unpublished (assessment work) reports in print and microfiche format.

## Mine Inspection Section

In the Yukon, the Mine Inspection Section, with our office at Whitehorse, gives advice on Yukon's Mining Safety Ordinance and Mine Safety Regulations and its Blasting Ordinance and Regulations. The Section also prepares new safety legislation when required. A Regional Mining Engineer, stationed at Whitehorse, works with a staff consisting of a district engineer, an electrical-mechanical engineer, an environmental engineer, a mine rescue superintendent, a claims inspector, and a clerk. They are responsible for the following: inspecting mines, quarries, and blasting operations for compliance with safety legislation; inspecting mineral claims for compliance with safety legislation; and inspecting mineral claims for compliance with the Yukon Quartz Mining Act.

## Mining Activities

The following summarizes the mines and mineral exploration activities in the Yukon and Northwest Territories for the calendar year 1982.

### *Northwest Territories*

#### Mineral Production and Development

Mineral production in the Northwest Territories during the calendar year 1982 was valued at \$569 million compared to \$397 million in 1981. Despite severely depressed world metal markets, the value of mineral production increased 43 per cent from 1981. Production of lead, zinc and gold increased because three new mines (Echo Bay's Lupin Mine, the Cullaton Lake Gold Mine and Cominco's Polaris Mine) completed their first year of production. In addition, Canada Tungsten Mining Corporation produced tungsten concentrate for the full year, after a strike in 1981, and Terra Mines Ltd.'s Camsell River mill resumed producing silver concentrate in mid-year.

Although mineral production had increased, at year-end it was evident that the mineral resource sector of the Northwest Territories, the largest private sector contributor to the economy, was suffering from the severe effects of worldwide recession. The sector was particularly affected by low base-metal and tungsten prices, which show no immediate signs of recovering. The largest mine in the N.W.T., Pine Point Mines, closed on January 2, 1983, and the tungsten operation of Canada Tungsten Mining Corporation closed on January 21, 1983. Production at both mines is expected to resume when metal prices recover.

## Mines

Mineral production came from 10 mining establishments: Canada Tungsten's Carleton Place Mine (tungsten), Cominco's Con Mine (gold), Cominco's Polaris Mine (lead, zinc), Cullaton Lake Gold Mine (gold), Echo Bay's Eldorado Mine (silver, copper), Echo Bay's Lupin Mine (gold), Giant Yellowknife Mine (gold), Nanisivik Mine (lead, zinc, silver), Pine Point Mine (lead, zinc), and Terra's Camsell River mines (silver, copper).

#### Outlook and Potential Development for 1983-84

The outlook for new mine development in the Northwest Territories reflects production decisions to be made on Giant Yellowknife's Salmitya and Cominco's Ptarmigan mine projects. Both are small gold projects that will become more attractive if the price of gold continues to rise. Ptarmigan ore could be trucked the few kilometres from the mine to the Carleton Place mill near Yellowknife for processing.

In the Nahanni region, development of Cadillac Explorations Ltd.'s Prairie Creek Mine had nearly been completed in the spring of 1982. However, work was suspended at that time because of low metal prices and the need to build an all season road from the Liard Highway to the minesite.

#### Mineral Exploration

Exploration expenditures during 1982 in the Northwest Territories decreased to approximately \$22 million, down from the \$50 million of 1981. Almost all exploration statistics showed major declines in 1982 when compared to the previous year. The number of properties explored declined 42%, from 214 in 1981 to 125 in 1982. The number of prospecting permits issued increased from 73 in 1981 to 91, but 39 of these covered coal exploration licences granted in 1981. Accordingly, remaining 52 prospecting permits issued for metallic mineral exploration in 1982 represent a figure 40% lower than the average for the last four years. Claim-staking also dropped drastically (by 77%) to 156 597 hectares from the 1981 figure of 672 442 hectares. The number of drill projects declined by 22% to 45 from 58 in 1981, and the amount of surface exploration drilling declined 36% to 64 000 m from 95 000 m in 1981.

Mineral claims staked and recorded in the Northwest Territories during 1982 with comparative figures for 1981 are shown in the following chart:

Districts	1982		1981	
	Claims Recorded	Area (ha)	Claims Recorded	Area (ha)
MacKenzie	145	56 236	539	282 202
Arctic				
Hudson				
Bay	106	82 837	479	381 514
Nahanni	35	17 524	238	726
<b>Total</b>	<b>286</b>	<b>156 597</b>	<b>1 041</b>	<b>672 442</b>

Of 125 properties explored during the year, 36 were explored predominantly for base metals, 34 were explored for uranium, 32 for precious metals, and the remaining 33 were explored for various other commodities.

#### Yukon Territory

##### Mineral Production and Development

Mineral production in the Yukon Territory during the 1982 calendar year was valued at \$168 million compared to \$268 million in 1981. The value of mineral production declined 37 per cent from 1981. At year end, all of the major lode mines in Yukon had been closed in the wake of severely depressed metal markets. Cyprus Anvil Mining Corp. and United Keno Hill Mines Ltd. closed in mid-year, and Whitehorse Copper Mines Ltd., closed at year end as a result of depleted copper ore reserves. Cyprus Anvil's Tantalus Butte coal mine did not open during 1982, as Cyprus Anvil had a sufficient stockpile of coal at its Faro Mine. The number of Yukon placer

gold operations also declined as a consequence of low gold prices during the first half of 1982. Yukon Barite Co. Ltd. began production of barite in mid-October at its Samovar Mine near Macmillan Pass on the north Canol Road, but closed the mine in December.

Prospects for 1983 depend largely on whether Cyprus Anvil Mining Corp. will restart its lead-zinc mine near Faro. The mine is the largest private sector employer in the Territory. Since mid-1982, the Department of Indian Affairs and Northern Development and the Company have been co-operating in the development of proposals to get the mine back into production. Discussions were continuing at year-end.

The outlook for Yukon placer gold mining is optimistic for 1983 because at the time of writing the price of gold in world markets is on an upward trend.

As expected for several years, Whitehorse Copper Mines Ltd. closed permanently on December 31, 1982, due to the exhaustion of ore reserves. The Company had tried to reduce its operating costs by increasing the number of tonnes milled per day to 2 300 from the average of 2 025 tpd in 1981, as the ore grade decreased from 1.42% copper in 1981 to 1.04% copper in September, 1982. One hundred and ninety persons were laid off.

Exploration was conducted in the Whitehorse Copper Belt and included 2 606 m of drilling on the North Star property. The drilling located only scattered low-grade copper mineralization.

The only bright spot in Yukon's lode mining activity was the start-up in mid-October of the Samovar Mine owned by Yukon Barite Co. Ltd. This mine is located on the Tea property in the Macmillan Pass area. Approximately 10 000 t of crude barite has been mined and trucked to Ross River, where a processing mill is under construction. Yukon Barite had contracts to supply ground barite to Beaufort Sea petroleum operators over a two-year period. When the mill is completed, the ground barite will be bulk-packed into two-tonne boxes and shipped by truck to Tuktoyaktuk. The Company hopes to negotiate additional contracts with other Beaufort Sea operators once it has demonstrated its ability to deliver a milled product.

##### Outlook and Potential Developments for 1983-84

Prospects for 1983 hinge mainly on whether mines currently closed in Yukon will resume production. The current outlook for reopening both Cyprus Anvil's Faro Mine and United Keno's mining operations is uncertain, as profitable operation in the future will depend upon significant recovery in metal prices, price stability and cost-cutting measures.

Among the better mineral deposits that could be classified as potential medium- and long-term producers in the Yukon is the \$175 million development of Amax of Canada Ltd.'s Mactung tungsten deposit near Macmillan Pass on the Yukon-Northwest Territories border. In January, 1983 the company announced that the start-up for there Mactung Mine is scheduled for late 1986 or early 1987.

##### Placer Mining

The Yukon Placer industry operated at a reduced level during 1982 because of low gold prices early in the placer mining season. Placer gold production for 1982 is estimated to be over 1860 kg, which is about 60 per cent of the 1981 production. The number and size of mining operations declined, as did the exploring staking and evaluation activities. Prospects for 1983 are buoyant as the world price of gold has continued to increase since mid 1982. On January 31, 1983 an ounce of gold was valued at \$617 compared to the low of \$385 on June 21, 1982.

##### Mineral Exploration

Mineral exploration in Yukon declined drastically during 1982, with exploration expenditures estimated at one third of the \$40 million spent in 1981. The year was characterized by low levels of on-property work, often restricted to the main target area. Fewer drill programs than usual were started, and fewer add-on claims and new claim groups were staked.

The outlook for exploration expenditures in 1983 will remain at a depressed level until metal prices increase significantly.

Mineral claims staked and recorded during 1982 and comparative figures for 1981 are shown in the following chart:

<i>Claims District</i>	<i>1982 Claims Recorded</i>	<i>1981 Recorded</i>
Whitehorse	981	3 586
Dawson	538	1 068
Mayo	408	3 208
Watson Lake	1 852	3 430
<b>Total</b>	<b>3 779</b>	<b>11 292</b>

In addition, 3 966 placer claims and 297 placer leases were recorded, and 116 properties were explored. Of these, 54 were explored for base metal, including 43 for lead-zinc; 25 were explored for precious metals; 14 for tungsten; and the remainder for various other minerals.

#### **Northern Economic Planning Directorate**

As a result of the 1982-83 Northern Program reorganization, the Northern Economic Planning Directorate now comprises three divisions: Energy Planning, Native Economy and Socio-Economic Agreements, and Economic Strategy.

##### *Energy Planning Division*

##### **Responsibilities**

The Northern Energy Planning Division facilitates federal government regulatory approvals for the Northern Canada Power Commission (NCPC) and provides advice to the Minister on this Crown corporation, which is the major producer and distributor of electric power in Yukon and Northwest Territories. It also co-ordinates and works with other federal departments and agencies and the Territorial Governments on matters relating to energy supply and demand. The security of supply, conservation and affordability of energy for northern residents are the main concerns in analysing the implications of providing energy subsidies and developing alternative energy sources for the North.

##### **Review 1982-83**

Three direct energy subsidies – the Federal Power Support Program, the Commercial Power Rate Relief Subsidy and the Domestic Home Heating Oil Subsidy were continued in 1982-83 from DIAND funds. Subsidies were paid to consumers through the N.W.T., and Yukon Governments. Research into the nature and magnitude of indirect energy subsidies in the North began, and options were identified for the future role and mandate of NCPC. The Division also carried out initial feasibility studies to assess the viability of a Western Arctic oil refinery.

##### **Plans for 1983-84**

Research will continue into options for long-term energy conservation in housing, and into alternative sources of energy. Studies on the appropriate means for assuring long-term electricity supplies for northern development will also be carried out. As well, a renewed role and mandate for a northern energy utility will be developed. These will be assessed in light of both the *Electrical Power North of 60°*, *Report of the Subcommittee on the NCPC* and the results of the National Energy Board's inquiry into NCPC's rate setting rationale.

##### *Native Economy and Socio-Economic Agreements Division*

##### **Responsibilities**

The staff develops policies and plans for providing maximum socio-economic benefits to all northern residents from economic development activity. The work involves analysing proposed development programs and projects and developing and implementing procedures that provide for: consultation with northerners; the creation of opportunities for training, employment and local business development; and the minimizing of any adverse socio-economic effects. Special attention is paid to the needs of native residents.

##### **Review of 1982-83**

The staff worked with Territorial officials, other federal officials, and petroleum company representatives to develop northern benefits components for the Canada Oil and Gas Act. Extensive consultations and negotiations were undertaken with federal and N.W.T. officials. These led to signing an Economic Development Agreement (EDA) between

Canada and the Northwest Territories in finalizing three subsidiary agreements covering tourism, small business, and development of human and natural resources. These agreements will see \$21 million in program funding over four years. Ninety per cent will be funded by the federal government and the rest by the Territorial Government. Initial discussions began on the development of an Economic Development Agreement with Yukon. Increasing attention was paid to the problems faced by native development corporations and other native businesses trying to establish themselves in the North. Staff were also involved in developing socio-economic agreements for the Norman Wells expansion project and in analysing and monitoring the socio-economic effects of activities in the mining and petroleum industries.

##### **Plans for 1983-84**

The staff will be monitoring and reviewing the implementation of the Canada Benefits packages in the North, as well as exploring more effective techniques for ensuring increased northern benefits from the development of non-renewable resources. Subsidiary Agreements under the Canada/N.W.T. EDA will be implemented; their effectiveness will be reviewed each year; new subsidiary agreements will be considered. An EDA with the Yukon will be negotiated together with a number of subsidiary agreements, which will then be implemented. Policies and programs will be established to permit a more co-ordinated approach to supporting native economic development activities in the North, with particular attention paid to the role of native development corporations. Staff will continue to be involved in planning activities related to major northern development projects.

## Economic Strategy Division

### Responsibilities

The Division has only recently come into being as a result of the reorganization of the Northern Affairs Program in late 1982. It formulates economic development strategies for both Territories, and co-ordinates regional and sectoral development with the Territorial Governments and other government departments and agencies. It reviews the economically oriented policies of the Territorial Governments, and will maintain a northern socio-economic base to allow for timely analysis of northern trends and circumstances. It participates in the assessment and review of major northern projects to ensure that net benefits to the northern territories are maximized.

### Review of 1982-83

The divisional staff carried out preliminary work on an Economic Strategy Paper and co-ordinated the drafting of a Yukon Strategic Plan. The Plan is a federal document being prepared in close consultation with the Government of Yukon, and will form the basis of an Economic Development Agreement with the Territory. The Division has also drafted a set of guidelines that federal departments and agencies can apply to oil and gas exploration in the Beaufort Sea; has administered socio-economic and cost-benefit studies associated with the establishment of a hydroelectric power plant on the Slave River and a topping plant in the Beaufort Sea region; conducted studies and prepared Cabinet Memoranda on the taxation of northern benefits and allowances; and was involved in the preparation of input/output tables and interpretive material for the economies of the northern Territories.

### Plans for 1983-84

The primary tasks of the Division for 1983-84 are the following:

- Strategic Planning: to complete current and follow-up work on the Yukon Strategic Plan; to integrate that plan into the annual review cycle under the Policy Expenditure Management System (PEMS); to complete equivalent work on a Strategic Plan for the Northwest Territories; and to complete the Northern Economic Development Strategy.

- Data Management: to establish a comprehensive, computerized data bank on the northern Territories in co-operation with the Territorial Governments; to implement methods of providing statistical and other data on the state of the northern economy and current problem areas on a regular and timely basis; to complete and, as necessary, continue work in areas such as the northern economic accounts and input-output tables; and to assess the feasibility and methodology of preparing longer-term forecasts of activity in the northern economy.

### Canada Oil and Gas Lands Administration

The Canada Oil and Gas Lands Administration (COGLA) administers a new regime for oil and gas development in the Canada Lands – a regime to ensure that three federal government energy objectives are met: security of supply and freedom from our current dependence on world oil; participation by Canadians in our oil and gas industry; and fair pricing and sharing of oil and gas revenues among governments and industry.

During 1982, COGLA took significant steps toward implementing this new regime in the North. Twenty-seven exploration agreements were concluded, calling for an investment of about \$1.3 billion for drilling 36 wells on 17 million hectares over the next five years. These exploration agreements include six with Esso, the operating company for exploration in the Mackenzie Delta – Beaufort Sea region; 20 with Panarctic Oils, the operator of an exploration program in the Arctic Islands; and one agreement with Canterra Energy, the operator of an exploration program in the Davis Strait. All agreements represented the renegotiation of existing exploration rights to make them conform to the government's new regime.

Drilling activity in the Beaufort Sea included the completion of four wildcat wells, three delineation wells and one well re-entered for drillstem testing.

Although not likely to be of commercial proportions, discoveries were recorded in four wells – two oil and two gas. The wildcat wells included three drilled by Dome Petroleum Limited, of which two were dry, and one flowed gas, and one drilled by Esso Resources Canada, which flowed oil at 170 m<sup>3</sup>/d from a depth of 2 330 m. The re-entered well, a Dome test which reached total depth in 1979, flowed oil at 46 m<sup>3</sup>/d from a zone at 3 125 m. Two delineation wells, drilled from an artificial island 5 km east of the Tarsiut oil discovery of 1980, confirmed the extension of oil zones, while a third from a drillship 16 km east of the discovery well, failed to find oil but tested gas from a shallower zone. Gulf, the operator for the delineation drilling, has indicated that the field does not appear to contain enough reserves for stand-alone development.

Five wells were drilled in the Arctic Islands in 1982. These included two wildcats and two delineation wells drilled by Panarctic from reinforced offshore ice platforms, and one well drilled by Chevron on Banks Island. Arctic drilling activity during 1982 resulted in one significant discovery: the Sculpin K-08 well tested gas at 212 000 m<sup>3</sup>/d from a zone at 1 450 m. However, reserves appear to be small.

Canterra Energy drilled one well, a dry hole, off southern Baffin Island.

An exploratory well drilled in the Mainland Territories, north of the B.C. border, was dry.

At Norman Wells, development work began in mid-1982, and over the balance of the year new oil producers and 20 water injection wells were completed. Start-up of this waterflood production expansion project is expected by mid-1985 and will result in an eightfold increase in production of the field through a proposed pipeline link to Alberta.

In other activity in the Norman Wells field, 59 wells produced 176 000 m<sup>3</sup> of oil in 1982, compared with 55 wells and 173 000 m<sup>3</sup> in 1981.

In the Pointed Mountain gas field, six wells produced 218 million m<sup>3</sup> in 1982, compared with six wells and 351 million m<sup>3</sup> the year before. In the hopes of reversing declining productivity of this field, a development well was drilled in 1982, but it was a dry hole.

In seismic activity in the North, 14,000 kilometres were shot, a slight decline from 1981. There was a 50 per cent decrease in seismic activity in the Mackenzie Delta-Beaufort Sea region, but a doubling of survey coverage in the Arctic Islands and a tenfold increase in the Mainland Territories. Also, an extensive survey was undertaken in central Hudson Bay, the first such activity since 1975.

Because of the North's unique environmental and social risks, COGLA helps ensure that the effects of oil and gas development neither conflict with the needs of northerners, nor pose an unacceptable threat to the environment. In response to social considerations, Canada Benefits plans submitted to COGLA by companies must contain commitments to hire northerners and procure northern goods and services. As well, the Northern Affairs Program of Indian and Northern Affairs advises COGLA on the best methods of maximizing northern socio-economic benefits and adapting them to the northern culture and lifestyle.

With respect to environmental protection in the North, COGLA monitors all exploration and development activities closely and exercises extensive regulations to prevent pollution and minimize its effects. When it approves commercial activity in the North, COGLA may require companies to either carry out additional environmental work or take special protective steps. COGLA also has regulatory powers under the Oil and Gas Production and Conservation Act and regulations. These powers enable it to set and enforce stringent conditions upon which approval for work programs depends. In exercising its mandate, COGLA receives assistance from the Northern Affairs Program and from other federal government departments and agencies.

Officials from COGLA have met with Territorial and native representatives in an effort to consult with northern residents on resource development in the northern Canada Lands. Also, consultation on oil and gas activities has been held through regional committees that advise oil and gas exploration and development companies directly on local views and concerns. These committees include the Beaufort Sea Community Advisory Committee and the Natsiq Committee in the Eastern Arctic. As well, the Hudson Bay Oil and Gas Advisory Committee is being established.

## Administration Program

### Technical Services and Contracts Branch

#### *Professional Services*

The *Buildings Division* provided technical support to the Northern Affairs Program by monitoring the performance of an energy-efficiency staff house in Frobisher Bay and expanding the monitoring program to a second house. The Division is also participating with other departments in the development of residential construction standards for the North. A staff member has discussed northern construction with interested groups in many northern communities. Plans and specifications have been prepared for upgrading fire safety and toilet facilities in the Igloodik laboratory building, and two catalogues of more than 100 new house designs were developed for the northern housing program, which stressed energy-efficient design.

A project management service was provided in the planning phase for three new district office buildings at Frobisher Bay, Yellowknife and Fort Smith.

#### *Plans for 1983-84*

The Division will continue to emphasize the development of energy-efficient housing for the North. Subject to approval, construction will begin on the office building at Fort Smith.

The *Technical Data Services Division* provides technical services and advice to the Northern Affairs Program and to the Territorial Governments relating to air and ground surveys, topographical and photomapping and photogrammetry.

In 1982-83, 3 417 km were flown to carry out aerial photography, mapping and mosaic production for 57 varied projects in both Territories.

#### *Plans for 1982-1983*

A comprehensive program is planned for air photography, mapping and mosaics, consisting of almost 400 separate items at a total estimated cost of \$330 000, not including the cost of in-house production.

## *Responsibilities*

The Minister of Justice appoints judges to the Territorial Supreme Courts, while the Department, with offices in Whitehorse and Yellowknife, directs court proceedings on behalf of the Crown under the Criminal Code, other federal statutes and Territorial Ordinances. The Department, through those two regional offices, also gives legal advice and assistance to the Territorial field offices of other federal departments. It also shares the costs of legal aid and the Native Courtworker Program. Finally it helps compensate victims of violent crimes in the Territories.

#### *Review 1982-83*

Payments totalling \$645 676 were made to the Northwest Territories, including \$411 519 (81-82) for legal aid, \$19 356 (77-81) and \$18 851 (81-82) for compensation to victims of violent crimes, and \$21 800 (81-82) and \$174 150 (82-83) for Native courtworker services.

Payments totalling \$287 732 were made to the Yukon Territory, including \$220 000 (81-82) for legal aid, \$18 125 (81-82) for compensation to victims of violent crimes, and \$4 607 (81-82) and \$45 000 (82-83) for Native courtworker services.

The legal aid cost-sharing agreement with the Northwest Territories was extended for one year, and the maximum federal contribution was increased to account for higher costs. Similarly, federal cost-sharing to Yukon was increased and extended for one year. The Yukon agreement was re-written to conform more closely to the cost-sharing arrangements for the Northwest Territories and the provinces.

#### *Plans for 1983-84*

During 1983-84, it is expected that the legal aid arrangements in the Territories will be examined with a view to taking into account changes that may be made as a result of the current legal aid negotiations with the provinces.

## Search and Rescue Operations

One of DND's objectives is to provide national and international rescue services.

### Activities for 1982-83

Aircraft and crews from seven Canadian Forces squadrons flew over 400 hours in various search and rescue missions across the North. In addition, during 1982-83, the Canadian Forces air demonstration team flew four air shows in the north at Whitehorse, Yellowknife, Watson Lake and at Fort Smith.

### Plans for 1983-84

The Department will continue to provide national and international search and rescue services, as required.

## Earth Physics Branch/Earth Sciences Sector

### Seismology

#### Responsibilities

The Seismological Service of the Division of Seismology and Geomagnetism determines the parameters of all significant earthquakes in northern Canada and offshore areas and provides assessments of earthquake risk. Research on the structure and properties of the Arctic lithosphere is conducted by carrying out deep-sounding experiments and studying surface wave dispersion and seismic wave velocities from Arctic earthquakes. Studies of the source mechanisms of earthquakes in active seismic zones provide data for investigations of seismotectonic processes and for the design of earthquake-resistant buildings. A network of seismograph stations is maintained in northern Canada, and field experiments on deep seismic sounding are conducted.

#### Review of 1982-1983

Standard seismological observatories were operated at Alert, Mould Bay, Resolute, Frobisher, Inuvik and Yellowknife. Regional observatories continued operation at Igloolik (with co-operation from the staff of the Igloolik Research Laboratory), Haines Junction (with co-operation from the staff at the Parks Canada Visitors Centre), Sachs Harbour, Tuktoyaktuk, Nicholson Point and Komakuk Beach (in a joint venture with Dome Petroleum to monitor the seismicity of the Beaufort Sea), Whitehorse and Baker Lake. The Yellowknife seismological array continued operation and the data transfer facility continued to send digital information on detected seismic events to the Ottawa computer. In a co-operative project, the U.S. Department of Energy installed a borehole seismograph near the Yellowknife array as part of the North American Regional Seismic Test Network. Data are transmitted to the U.S. by satellite link, and selected data are acquired on request for studies of northern Canadian earthquakes. Seismic data on global events detected at standard observatories are relayed via Ottawa through a computer link to the National Earthquake Information Service in the United States. The Yellowknife array detection bulletin is transferred by computer link to research groups in the United States and Great Britain.

Routine analysis of all detected earthquakes in and near the Canadian North continued. Rapid determinations are made of earthquakes of special concern or scientific interest; bi-monthly lists of all earthquakes are prepared about six months after their occurrence, and final findings are published in Canadian and international catalogues.

Research on the seismicity of the southwestern Yukon has been completed, delineating the active areas within the previously poorly defined seismic zones. This work completes the project (supported in part by Foothills Pipe Lines (South Yukon) Ltd.) involving the monitoring of seismicity in the region of the proposed ALCAN pipeline route. Analysis of the Beaufort Sea seismicity has continued, with emphasis on utilizing data from the additional monitoring stations (supported by Dome Petroleum) to assess the location accuracy of Beaufort Sea earthquakes.

Research on seismic risk has produced new seismic risk maps of northern Canada to replace the 1970 seismic zoning map. These results have been adapted to new seismic zoning maps for National Building Code applications and provide improved estimates of earthquake risk in the North for facilities and structures not included in the normal provisions of the Building Code. Special studies of the continental margin of Labrador and Baffin Bay have shown that estimates of earthquake risk can vary significantly with different models of the poorly-understood active earthquake zones.

#### Plans for 1983-84

The seismological observatories in the North and the Yellowknife seismological array will be maintained. These facilities will continue to contribute important data to Canadian and international research projects.

The analysis and publication of northern earthquakes will continue. Large potentially damaging earthquakes will be identified and reported on as soon as possible. Detailed scientific studies of the larger northern earthquakes will continue as data and records become available. Special studies of seismicity and earthquake hazards will continue in regions of current and potential petroleum exploration in the northern offshore.

As part of the CESAR project, detailed plans have been developed jointly with the Geological Survey (Ottawa) and the Atlantic Geoscience Centre for a crustal seismic refraction survey over the Alpha Ridge and adjacent basins. The surveys will be conducted during April 1983.

#### *Geothermics*

##### **Responsibilities**

The Geothermal Service of the Division of Gravity, Geothermics and Geodynamics provides information on the thermal regime of the Canadian landmass and surrounding waters as related to geotectonics, permafrost, geothermal energy potential, and the thermal properties of materials. The foundation of this information is a data base comprising field measurements of subsurface temperatures and laboratory measurements of the thermal and heat generation properties of earth materials.

##### **Review of 1982-83**

Through the provision of logistics assistance by the Polar Continental Shelf Project, the acquisition, preservation, and abandonment of northern wells has continued. A further volume in the geothermal data collection was published containing data from new sites on Little Cornwallis Island, in the Arctic Islands, and from a number of new sites in Yukon. Deep subsurface temperatures and permafrost thickness have now been established for 140 sites in northern Canada. In several areas, a number of wells cluster at varying distances and elevations from Arctic shorelines allowing an examination of the relationship between the shoreline history, post-glacial emergence and the

permafrost and geothermal fields. The mature data base from the subsurface temperature observations has been used to determine the general distribution of gas hydrates and the dynamic relationship between free gas and gas hydrate as a geological phenomenon.

As an initial study of the regional thermal field, all existing thermal data for Yukon was combined and analysed in terms of mean surface temperature, geothermal gradients, and permafrost thickness.

Studies and monitoring of the freeze-back at the Illisarvik drained lake site continued with detailed modelling of the pre-drainage talik beneath the lake bottom. A minimum age of 1 000 yrs for the present lake has been calculated and is being compared with a second model derived from the distribution of oxygen and hydrogen isotopes in the permafrost surrounding the talik. The results of refreezing of the lake bed are being compared with the freezing of soils at the Calgary chilled pipeline test facility, now jointly managed as a research site by EMR and Foothills Pipelines Limited. Similar contracted studies, conducted by Carleton University, have started in a controlled environment facility at Caen in northern France.

##### **Plans for 1983-84**

The Geothermics Program will continue to carry out important fundamental research in northern processes and geotectonics. Effort will be made to acquire and visit new field sites. Several contracted studies are collecting other information on permafrost from an interpretation of downhole well-logs, and other information on the thermal field from low accuracy industrial data. A combination of the available data sets will be used to produce several regional syntheses of the thermal field and the permafrost distribution.

The Service will participate in the multidisciplinary CESAR experiment from April to June 1983. Temperature gradients will be measured in the bottom sediments by means of a probe lowered to the seafloor, and sediment cores will be brought to the surface and analysed for thermal conductivity with the aid of micro-computer controlled equipment.

#### *Geomagnetism*

##### **Responsibilities**

The Geomagnetic Service provides information on the direction and intensity of the earth's magnetic field over Canada and adjacent ocean regions. It publishes magnetic charts of Canada and provides information for many other maps (including aeronautical and marine charts) on the angle between true north and magnetic north and its change from year to year. The Service provides information on the structure of the earth's crust and reference fields for the interpretation of the more detailed commercial surveys carried out in exploration for minerals, oil and gas. The magnetizations acquired by rocks at their initial formation and during their subsequent history are analysed to learn when and how geological structures were formed. Knowledge of the evolutionary process is important in understanding how fossil fuel and mineral deposits originated and where they might be located.

The Geomagnetic Service also records and analyses rapid variations of the earth's field, with periods measured in hours or seconds. Twelve magnetic observatories continuously record these changes in Canada. Three are in the auroral zone and five in the polar cap, north of the auroral zone. The rapid magnetic variations provide information on electric currents in the ionosphere and on the physical properties and dynamic behaviour of the magnetosphere. These studies have practical application in the North: telecommunications, the transmission of electric power, and the investigation of deep crustal structure by electromagnetic induction.

### Review of 1982-83

Magnetic observatories operated continuously through 1982-83 at Alert, Mould Bay, Resolute, Cambridge Bay, Baker Lake and Yellowknife. Recording of magnetic variations in digital form continued at Igloolik, where personnel from the Department of Indian Affairs and Northern Development operate the equipment. Magnetic repeat stations were re-occupied at Pond Inlet, Clyde River, Igloolik, Repulse Bay, Coral Harbour, Cape Dorset, Inuvik, Sachs Harbour, Eureka, and Pangnirtung. To celebrate the centenary of the first International Polar Year, three of the original Canadian stations Fort Rae, Clearwater Fiord, and Fort Conger) were also re-occupied.

Paleomagnetic sampling in the Arctic islands continued with the collection of Cretaceous volcanic and sedimentary specimens on northern Ellesmere Island. Good progress has been made in analysing rock units previously collected from the Mackenzie Mountains and from the Red River Canyon formation of Ellesmere Island. Work in sediments from Cornwallis Island has been completed. Magnetotelluric data from project LOREX have identified strongly conducting layers commencing at a depth of about 150 km beneath the Lomonosov Ridge and at a depth of about 80 km beneath the Fram Basin. These results suggest that the lithosphere may thicken substantially beneath the ridge.

### Plans for 1983-84

The six magnetic observatories will operate throughout 1983-84. In the continuing program of secular change studies, magnetic repeat situations will be re-occupied at Frobisher Bay, Port Burwell and Fort Chimo. A magnetotelluric experiment will be conducted on the sea ice over the Alpha Ridge during the project CESAR. Analysis of rock units collected in the Mackenzie Mountains, N.W.T. and on Ellesmere Island will continue.

### Gravity Services

#### Responsibilities

The Gravity Service of the Gravity, Geothermics and Geodynamics Division is responsible for completing the regional gravity survey of the Canadian landmass and offshore regions. In the far North, the Division carries out this work in co-operation with EMR's Polar Continental Shelf Project. Precise observations of gravitational forces provide basic data for the mineral and exploration industries and for studies of sedimentary basins and the earth's crust and upper mantle. These observations also provide data for geodetic studies and meet certain needs of the Department of National Defence. The Division is responsible for establishing gravity standards throughout Canada by maintaining a first-order network of gravity stations to serve both as a reference and as control points for all regional and detailed gravity surveys. It also maintains a bank of all gravity data that meet national standards.

#### Review of 1982-83

A field party, supported by helicopters and sponsored by the Polar Continental Shelf Project, worked in co-operation with the Canadian Hydrographic Service to complete a gravity survey of Prince of Wales Strait between Banks Island and Victoria Island. Readings from more than 280 gravity stations spaced 6 km apart were taken.

The second and final phase of a contract survey of the East Arm of Great Slave Lake was completed in the spring of 1982. Readings from about 120 gravity stations were taken on the frozen lake surface at an average station spacing of 4 km.

Detailed gravity surveys were conducted along two east-west profiles located within the Wopmay Orogen of the Bear Structural Province, N.W.T. Station spacing in both profiles varied from 1 to 4 km. Both profiles were designed to define faults that bound approximately hexagonal-shaped crustal blocks that constitute a large sector of the orogen. A total of 67 gravity observations were made.

Two large sheets (posters) at a scale of 1:500 000 showing strip maps of geology, bathymetry, topography, Bouguer and Free-air anomalies, seismicity, aeromagnetic anomalies, structural sections to a depth of 48 km, and gravity interpretation along a north-south transect from the North American craton to the Canada Basin were compiled for the North American Continent-Ocean Transects Program.

Two new ideas about Arctic tectonic history have been published. The first suggests that the mid-Paleozoic Ellesmerian orogeny in the Arctic Islands was produced when a continental terrane that included northern Alaska was displaced southwestwards by as much as 2 000 km from its initial orogenic site to the north and east of Ellesmere Island. The second idea is that the Lomonosov Ridge was sheared from the polar margin of western Eurasia, probably in Late Cretaceous time, along a trans-Arctic left-lateral offset that may have been related to the opening of Baffin Bay. The Eurasia Basin was opened later, in early Tertiary time, when the North Atlantic rift extended into the Arctic Region and separated the Lomonosov Ridge from Eurasia.

#### Plans for 1983-84

A proposal to study the nature of the crust below the Alpha Ridge has been approved. This EMR-sponsored sequel to LOREX 79, named CESAR 83, will be deployed in the spring of 1983. Gravity measurements are among the many geophysical techniques that will be used to study this feature of the Arctic Ocean.

A regional gravity survey of the polar shelf north of Ellesmere Island is scheduled for March-April 1983 in co-operation with the Canadian Hydrographic Service.

Interpretation studies planned for 1983-84 include: interpretation of the CESAR results; completing the compilation of an Arctic Transect Poster (in two sheets); an analysis of gravity data along the Transect; compiling a new gravity map of the Arctic Ocean Region north of 64°N (scale 1:6 000 000) on a polar projection; compiling of gravity and structural sections of the western Arctic Archipelago and polar margin for publication in the DNAG Arctic volume; an analysis of the gravity field of the Inuitian Orogen and Arctic Platform for publication in the DNAG Inuitian volume; compiling gravity data over the Beaufort Sea and Mackenzie Delta for publication in the DNAG Beaufort Sea volume; and compiling gravity and landsat imagery (scale 1:1 000 000) of the Beaufort Sea Region for publication in a Marine Science Atlas of the Beaufort Sea.

## Earth Sciences Sector

### Surveys and Mapping Branch

#### *Responsibilities*

The Surveys and Mapping Branch provides geodetic, topographic and geographic information on the Canadian land-mass by producing and distributing maps, aeronautical charts, aerial photographs, the National Atlas of Canada, the Canada Gazetteer Atlas and gazetteers of place names. The Branch also ensures that national, provincial and territorial boundaries are correctly positioned, marked and maintained. Surveying Canada Lands (national parks, Indian Reserves and territorial lands) is an added responsibility of the Branch. It also provides scientific and technical support to other federal and provincial government departments and agencies.

The Branch has seven units: Branch Headquarters, Geodetic Survey Division, Legal Surveys Division, Topographical Survey Division, Reproduction and Distribution Division, the International Boundary Commission, and Geographical Services Directorate.

The Branch Director-General is Chairman of the Interdepartmental Committee on Air Surveys and the Co-ordinating Committee on Offshore Surveys. The Branch also provides the secretariats for the Canadian Council on Surveying and Mapping and the Canadian Permanent Committee on Geographical Names.

### Geodetic Survey Division

#### *Responsibilities*

The Geodetic Survey maintains and extends national survey networks to meet the needs of the provinces, industry and other federal agencies. These surveys are used for engineering work, natural resource development, environmental studies, national security, and national mapping. In addition, they form part of the larger North American Continental reference system.

#### *Review of 1982-83*

In the Arctic Islands, the Division established 57 new Satellite Doppler points. These were positioned on the islands north from Cornwallis toward Ellef Ringnes then southwest toward Prince Patrick Island. Nine additional points were positioned in the Beaufort Sea coastal area to strengthen and upgrade existing surveys. Satellite Doppler points were also positioned along the boundary between Saskatchewan and the Northwest Territories; near Rankin Inlet, on Hudson Bay; northeast of Wrigley; and north of Fort Providence.

At the request of the Northwest Territories Government, the Inertial Survey System (I.S.S.) was used to establish nine new points and to position two navigational aids near Great Bear River between Fort Norman and Fort Franklin. Other I.S.S. surveying, mainly for national mapping work, was carried out to the northeast of Fort Simpson.

The Primary Vertical Control level line along the Mackenzie Highway was re-leveled from the Alberta border as far as Pine Point. It was then extended at the request of the Territorial Government eastward to Fort Resolution.

In the Yukon Territory, primary horizontal points were provided at the settlements of Tagish and Teslin. Also in the southern Yukon Territory, the Primary Horizontal Control network was strengthened by adding primary Satellite Doppler points and taking astronomic observations.

Two sites for Very Long Baseline Interferometry (VLBI) were prepared - one at Whitehorse and another near Yellowknife.

#### *Plans for 1983-84*

The Satellite Doppler method will be used to provide survey control for mapping in the vicinity of Great Bear Lake and from the west end of Coronation Gulf eastwards to the east end of Queen Maud Gulf, including King William Island. A precise level line will be extended from the Mackenzie River at Fort Norman to Fort Franklin, then northeast via Great Bear Lake to Coppermine. A second leveling project is planned from the British Columbia Boundary to Fort Simpson, along the Liard Highway route.

In the Yukon Territory, Satellite Doppler points will be established along most of the main highways and at the settlements en route. Additional survey for mapping is scheduled for the southwest corner of the Yukon Territory in the St. Elias mountains. Local survey nets involving the VLBI sites prepared at Whitehorse and Yellowknife in 1982-83 are scheduled for survey in the summer of 1983.

### Legal Surveys Division

#### *Responsibilities*

The Division, through its Regional Offices in Whitehorse and Yellowknife, is responsible for surveys carried out for land and resource transactions in connection with the development and administration of public and other lands in the Northwest and Yukon Territories. It also ensures the accuracy of surveys, land descriptions, and plans of survey prepared under the Canada Lands Surveys Act and other applicable Acts and regulations. Federal responsibilities for defining, surveying and maintaining provincial and territorial boundaries in Canada have been delegated to and discharged by the Division. It also provides survey related advice and assistance to local government officers and the public as required.

## **Review of 1982-83**

### *Yukon Territory*

Three Legal Surveys were performed under contract in the Dawson Mining District for the Northern Affairs Program. Seven were carried out for Indian and Inuit Affairs, of which three were located in Northern British Columbia. Twenty-one km of boundary was surveyed in Kluane National Park for Parks Canada.

In addition to conducting four inspection surveys, regional staff carried out surveys at Carcross and Dawson, along with a maintenance survey of parts of the Whitehorse Co-ordinated Survey Area. Forty-nine plans under the Canada Lands Surveys Act and twenty-one plans under the Land Titles Act were examined, while fifty-one sets of survey instructions were issued.

### *Northwest Territories*

One contract survey of Reid Lake Campground at Yellowknife was done for DIAND. Regional staff carried out survey investigations at Madeline and Prelude lake and on the Salt Plains Indian Reserve, and inspected surveys at Tuktoyatuk and Quad 86E/9.

Regional staff were also involved in control and targeting operations for large-scale mapping in the communities of Sanikiluaq, Snowdrift and Fort MacPherson and on the Ingraham Trail in Yellowknife.

The Division issued 33 sets of instructions and examined 77 plans.

## **Plans for 1983-1984**

### *Yukon Territory*

Activities will concentrate mainly on projects for DIAND.

### *Northwest Territories*

Proposed activities will include staff survey services and contract administration for DIAND. Property mapping is planned for an Indian Reserve and 10 communities. In addition to fulfilling its survey regulation responsibilities and carrying out inspection surveys, the N.W.T. Region will offer field assistance and support to the Territorial Government for its large-scale community mapping program. Research into the establishment of a N.W.T. land information system will be undertaken.

## **Topographical Survey Division**

### *Responsibilities*

The Division produces and maintains topographic maps of Canada for general purposes at scales of 1:250 000 and 1:50 000. It also meets the information needs of groups and organizations involved in activities relating to resource development, regional and urban planning and development, environmental management, engineering construction, national defence, and recreation. The Division provides technical advice to the Canadian International Development Agency and other government departments and agencies on mapping projects and, finally provides technical and administrative services to the Interdepartmental Committee on Air Surveys.

### *Review of 1982-83*

In 1982, a total of 47 288 km of aerial photography was flown in the North for 1:50 000 mapping. Indexes showing the present status of aerial photography may be obtained from the National Air Photo Library, 615 Booth Street, Ottawa, Ontario, K1A 0E9. Topographic map indexes are available from the Canada Map Office, 615 Booth Street, Ottawa, Ontario, K1A 0E9.

In the North, 204 new 1:50 000 maps were completed, and 57 maps at the 1:250 000 scale were overprinted with revisions. In northern Canada, some maps were revised by adding data located on LANDSAT (land satellite) imagery.

## **Plans for 1983-84**

The Topographical Survey expects to produce 221 new 1:50 000 map sheets of areas in northern Canada during the coming fiscal year. This figure includes maps produced in-house and those done under contract.

In 1983-84, 12 000 km of photography will be ordered for 1:50 000 mapping in the Northwest Territories and Yukon Territory. About 65 per cent of the photography ordered in the North is usually completed successfully.

## **Reproduction and Distribution Division**

### *Responsibilities*

The Reproduction and Distribution Division is responsible for the photo-mechanical, phototypesetting, lithographic printing and bindery services for the Surveys and Mapping Branch's mapping products. It also reproduces maps for other federal and provincial government departments and agencies and for users in the municipal and private sectors. The Map Reproduction Centre provides these services on a cost recovery basis.

The Division, through the Canada Map Office (CMO), is also responsible for the storage, retrieval, mail order sales and distribution of all specialized maps acquired from other federal government departments, and all topographical and thematic maps, aeronautical charts and publications and related air information produced by the Surveys and Mapping Branch. The CMO also maintains and supports an authorized topographical map and aeronautical chart dealer network throughout the world.

The National Air Photo Library (NAPL) is responsible for the indexing, archive storage, retrieval, sale and distribution of products and information related to federally owned or controlled aerial survey, airborne remote sensing and satellite imagery. The NAPL Reproduction Centre processes the film, reproduces the imagery and has custody of the original material.

### **Review of 1982-83**

The Division printed 310 line maps and 31 photomaps at the scale of 1:50 000 or 1:250 000 of the National Topographic System. Printing services were provided for all scales of the Canadian Aeronautical Chart series. This included Pilotage, Enroute, Visual Navigation and Plotting Charts as well as a number of Air Information Publications and Joint Operations Graphic Air Charts to meet Department of National Defence requirements. A total of 66 items were printed. The Division also provided printing services to Environment Canada for 31 maps of the Northern Land Use Information series, and to the Canadian Hydrographic Service of Fisheries and Oceans for 22 charts of Northern Waters. In support of the Geological Survey of Canada, the Division printed 12 geological maps. Map and chart indexes were also printed for all published maps and charts.

The Canada Map Office received 664 orders for maps and charts from the Yukon and Northwest Territories for a total value of \$105 034.

During the fiscal year, 41 requests for air photo products and services from the Yukon Territory for \$35 600, and 28 from the Northwest Territories for \$4 000, were processed.

### **Plans for 1983-84**

The Map Reproduction Centre will continue to provide reproduction and other services in the coming year. The number of items to be printed and services to be requested will depend on the number of maps produced by the Surveys and Mapping Branch and the demands of other government departments.

### **International Boundary Commission**

#### **Responsibilities**

The work of the Commission is largely one of boundary maintenance and regulation of works within three metres of the boundary. The Commission also determines the position of the boundary should questions arise between the governments of Canada and the United States.

### **Review of 1982-83**

There was no boundary maintenance required for that part of the boundary north of 60°.

### **Plans for 1983-84**

No operations are planned in the North for fiscal year 1983-84.

### **Geographical Services Directorate**

#### **Responsibilities**

The Directorate is responsible for designing and producing small-scale maps, The National Atlas of Canada, aeronautical charts, and flight information publications. It also operates a toponymic (geographic names) service and provides cartographic support services to federal and provincial departments and private agencies.

During the year, 10 additional maps of The National Atlas of Canada became available at the scale of 1:7 500 000. All the maps include coverage of Canada's northern areas up to the North Pole.

Themes portrayed include "Canada - Then and Now", coal, fish hatcheries and the 32nd Parliament. The following map titles (available in French and English versions) were published in 1982-83:

Canada - (1:7 500 000)

Canada - (1:5 000 000)

Canada - Confederation/Confédération

Canada - Territorial Evolution/Evolution territoriale

Canada - Coal/Charbon

Canada - Public Fish Hatcheries/Piscifac-tures publiques

Canada - 32nd Parliament/Le 32 ième Parlement

Five maps were completed depicting geodetic control networks in Canada, two LANDSAT-4 index maps, and one map for the visually handicapped. All eight maps included northern coverage.

Cartographic services provided to other departments and agencies included an R.C.M.P. Division boundary map, a Welcome to Canada map for Employment and Immigration Canada, a Bank of Canada map, and electoral boundary maps for the Chief Electoral Officer.

During 1982-83, aeronautical Charting activity for pilots flying under Visual Flight Rules (VFR) in the Canadian North included producing two new charts, revising 43 others at the scale of 1:500 000, and one at the scale of 1:1 000 000. The Alaska Highway Aeronautical Chart, covering the Alaska Highway between Fort Nelson and Northway, Alaska, was also revised.

Various charts for pilots flying under Instrument Flight Rules (IFR) were revised periodically, as indicated: High and Low Altitude Enroute Radio Navigation Charts (56 days); IFR Supplement (56 days); Northern Supplement (56 days); Water Aerodrome Supplement (12 months); Canada Air Pilot Amendments (28 days); Designated Air Space Handbook (112 days); the Flight Planning and Procedures Publication (6 months); and the Polar Plotting Chart (12 months). All of these publications have sections pertaining to flight in the Canadian North.

### **Plans for 1983-84**

The Directorate's planned mapping activities for the North include completing maps for The National Atlas of Canada. Themes include: oil and natural gas pipelines; road transportation; time zones; glaciers; temperature; solar radiation, population distribution; drainage basins; and electricity. The Directorate will be managing the production of three electoral boundaries maps of the North.

Fifteen Visual Flight Rules (VFR) chart revisions are planned, and five new large format, 1:500 000 scale charts will be produced. The normal revision cycles of Instrument Flight Rules (IFR) charts and publications will be maintained.

## Atmospheric Environment Service

### Responsibilities

The Atmospheric Environment Service (AES) is the federal agency that provides services and information relating to weather, climate, ice and air quality. The Service's activities contribute to the safety of Canadians and the security of their property. AES services include historical, current and future information on weather, climate, sea state and ice conditions for all areas of Canada and contiguous waters. Specifically, through its observation and communication networks and Arctic forecast systems, AES receives and processes surface observations and upper air information throughout the year, conducts ice reconnaissance missions, and provides consultation on, and forecasts of, atmospheric, ice and sea conditions.

The Service is involved in northern development and exploration by participating in the federal Environmental Assessment and Review Process (EARP). Because concern for environmental quality has been increasing in recent years, the AES has become more involved with air quality. For example, it has helped to develop national objectives for the quality of the ambient air. It has also carried out research, provided information about the environmental aspects of acid rain and toxic chemicals, and has participated in international air quality negotiations.

### Review of 1982-83

Additional improvements were made to the communication facilities in the North including a satellite-based communication link to Eureka and Alert.

Nordair Limited was awarded a five-year contract to continue operating ice reconnaissance aircraft for the Ice Program.

The study of air pollution in the North continued with the monitoring and analysis of Arctic haze and other phenomena.

Work has progressed on a number of climatological studies in the North, and two comprehensive regional climatologies of the Yukon and the Canadian Arctic Islands were published.

A comprehensive marine oil spill trajectory forecast system was implemented at the Canadian Meteorological Centre (CMC).

The CMC and Arctic Weather Centre (AWC) prepared appropriate weather analyses and forecasts to support a number of expeditions staged through Eureka (e.g., the Solo North Pole Expedition, Project CESAR).

This year marked the 35th anniversary of the High Arctic Weather Stations (HAWS) at Eureka and Resolute. A study conducted by the Clarke Institute of Psychiatry and by members of the Faculty of Medicine of the University of Toronto, has been undertaken for AES to investigate the stresses and problems involved in living and working in isolated conditions such as those encountered in these stations in the far North.

### Plans for 1983-84

AES management will be studying the reports on the Canadian Forecast System Review and Human Resource Planning, which have been completed during the 1982-83 period. The Level of Service report, to be tabled during the summer of 1983, will include recommendations on the level of meteorological services that the federal government should provide Canadians through general revenues. Future plans for AES will be based on these reports and developed during the 1983-84 period.

A new vector computer will be installed at the Canadian Meteorological Centre in the fall of 1983. Experiments with satellite-based communications to the North will continue for both the collection and the distribution of information. Ultra-violet water purification units will be installed at some stations. Atmospheric pollution studies will be continued at the same level in 1983-84.

Subject to approvals, an iceberg surveillance service will be initiated, and the present ice information service provided to marine and offshore interests will be significantly upgraded.

A thorough study of the High Arctic Weather Stations will be carried out this year prior to developing a new long-term plan for these stations. The second phase of the study on the effects of living and working in isolated conditions that began in the spring of 1983 will examine procedures and personnel at each station. Weather, ice and environment forecast methods and systems developed for the North will be evaluated, and necessary improvements introduced.

### Administration Branch

#### Responsibilities

The Administration Branch provides financial, materiel management, library, and general administration services to AES Headquarter's elements, AES Regions and those organizations whose central elements interface with AES headquarters.

### Review of 1982-83

During April 1982, AES carried out comprehensive health and safety inspections at the High Arctic Weather Stations. It also carried out on-site training sessions on health and safety. These sessions included training in operating fire fighting equipment.

### Plans for 1983-84

In 1983, ultra-violet water purification units will be installed at some stations. Safety inspection visits to all High Arctic Weather Stations are scheduled for May and September 1983. Inspection visits are also being planned to other isolated weather stations in the Central and Western Arctic.

## Atmospheric Research Directorate

### Responsibilities

The Atmospheric Research Directorate (ARD) advances our knowledge of the atmosphere and its effects on man, his activities, and the natural environment.

### Review of 1982-83

Daily surface-based measurements of total atmospheric ozone continued at Resolute, N.W.T., using a Dobson ozone spectrophotometer. Once each week, a vertical ozone profile from the earth's surface to approximately 30 km altitude was obtained by using a Science Pump-ECC electrochemical balloon sonde.

The Canadian Arctic Air Pollution Program (CAAPP) of the Air Quality and Inter-Environmental Research Branch completed its fourth year of network operation and integrated special studies. Network stations at Alert, Mould Bay and Igloolik continued to monitor the Arctic haze phenomenon by analysing for major ions and heavy metals in atmospheric particulate samples and by monitoring the light scattering co-efficient of the aerosol using Integrating Nephelometers. CAAPP is part of an international effort involving Canada, the United States, Norway, Denmark and Great Britain. During 1982-83, results from the 1982 special study at Igloolik were published. They showed that sulphur dioxide has an annual cycle in the Arctic and that it may accumulate over the Arctic night.

In March 1983, AES co-operated with U.S. scientists in the Arctic Gas and Aerosol Sampling Program (AGASP). While the U.S. team flew over much of the Arctic in the NOAA P-3 Aircraft, AES scientists provided information on the surface aerosol concentration in Alert, N.W.T., and released additional ozonesondes. AES will participate in the analysis of some of the data from the flights.

The collection of carbon dioxide samples continued as part of an investigation of possible climate changes.

Scientists in Meteorological Services Research Branch (MSRB) carried out R&D on methods and systems for forecasting weather, ice and environmental parameters in the North. In particular:

- Empirical weather prediction methodology was developed and tested for Arctic marine areas and work started on implementing empirical wind forecast methods for Canadian airports, including those in some northern locations.

- A freezing spray forecasting system was implemented at Canadian Meteorological Centre, as was a comprehensive marine oil spill trajectory forecast system for open seas. The feasibility of a spectral wave forecast model for the Beaufort Ocean, including the Labrador Sea and Davis Strait, was implemented at the Canadian Meteorological Centre. A model for forecasting storm surges was designed and tested on selected historical cases.

- Upgrading and sensitivity testing of sea ice and ice thermodynamics forecast models for the Ice Branch ice forecasting system was carried out, and a comparison-evaluation of different numerical methods for solving the models' equations was conducted. A berg-drift forecast model was developed and tested on historical records of iceberg movements in the Labrador Sea, Davis Strait, and Baffin Bay areas.

#### **Plans for 1983-84**

As a means of rationalizing technical and administrative support for the CAAPP Sampling network, the stations at Alert, Mould Bay, and Igloolik have been integrated with the Canadian Air and Precipitation Monitoring Network (CAPMON). They are now referred to as the Canadian Arctic Air Sampling Network (CASSN). In a review of the CAAPP program to date, a decision was made to continue sampling at the present level through 1984 and to increase the level of sampling at one station to include sulphur dioxide.

The Air Quality and Inter-Environmental Research Branch is reviewing the needs for more air quality services for the North in view of increased development in the Beaufort Sea area and Western Arctic. A decision on additional monitoring in the Western Arctic as suggested by DIAND will be made in 1983-84.

Analysis of the data from the AGASP study will be completed. More AGASP flights are envisaged for 1984 or 1985, and AES will be asked to participate.

Work will be carried out to evaluate the weather, ice and environmental forecast methods for the North.

#### **Canadian Climate Centre (CCC)**

##### **Responsibilities**

The CCC provides an effective climatic service directed toward understanding and predicting the inter-relationships between climate and man's activities.

The CCC is the lead agency for the Canadian Climate Program, a national program to co-ordinate climate-related activities in Canada.

##### **Review of 1982-83**

Work on comprehensive regional climatologies, designed for use by individuals and agencies with a wide variety of interests in the North, has focused on Yukon. The text of the Yukon climatology is expected to be completed by June 1983. Volume 2 of a companion publication, dealing with the climate of the Canadian Arctic Islands was published in early 1983.

An analysis of the patterns of climate change (which could be associated with increased atmospheric carbon dioxide) in the Arctic was completed. A computer program was written for the analysis of 30 years of pressure observations. When processed, the data will help scientists to determine the characteristics of high and low pressure systems in the North.

During the year, the Centre emphasized the development of data bases and analyses needed to better define offshore climates. A Marine Statistics (MAST) Program was developed to facilitate analysis of ship weather observations. The system was adapted to land-based data as well. An assessment was made of the usefulness of weather observations taken over a period of several years at scientific sites in the North and collected by the Polar Continental Shelf Project.

A significant amount of effort was devoted to evaluating various documents relating to the Environmental Assessment and Review Process (EARP). To ensure that good baseline temperature and precipitation data are available to define the climate of the Mackenzie River Basin, a large-scale assessment of the climate network in the Basin was carried out. Recognizing the inadequacy of the existing network, the study recommended the establishment, in co-operation with Inland Waters Directorate, of approximately 25 new climate stations within the Mackenzie River basin north of 60°. University research on snow distribution in high Arctic basins was supported once again, and the collection and assessment of data on alternative methods of snowfall measurement continued.

#### **Plans for 1983-84**

Information packages on offshore climates for the use of energy and transportation concerns will be developed. A climatology of high- and low-pressure system trajectories will be produced. The Yukon climatology will be completed and published.

Work will begin, in co-operation with other agencies, on assessing sea-ice motion and pressures at a site in Lancaster Sound. Another new project will address the impact of climate change on Canada's permafrost regime.

Contouring programs will be developed to help in preparing climatological charts. Ship and drill-rig data series will be checked for completeness.

#### **Central Services Directorate**

##### **Responsibilities**

Through its Ice Branch, the Central Services Directorate (CSD) provides ice information needed for transport and resource exploration in the Arctic. It also provides computing services and technical and professional training, maintains data acquisition networks, and provides expertise in developing and using atmospheric instruments and systems.

##### **Review of 1982-83**

The information services provided by Ice Branch (current and forecast ice conditions, consultation, climatology) increased again in 1982. In June and July, a second "ground truthing" experiment relating to the microwave signatures of ice (this time under melting conditions) was successfully completed at Mould Bay. Scientists from the Jet Propulsion Laboratory, from the Universities of Kansas and Washington, NASA and the Naval Research Laboratories of the United States and the Department of Energy, Mines and Resources, joined AES research staff.

A satellite-based communication link to Eureka and Alert was commissioned in 1982-83 and successfully used to carry meteorological observations to the South. In addition, improvements were made to the speed of communications at a number of stations in the North. An experimental link for transmitting facsimile information was set up between Frobisher and the Ice Centre in Ottawa and the Canadian Meteorological Centre in Montreal.

The safety of aerological observers and support staff was improved by replacing aging hydrogen generators crucial for operating balloon-borne atmospheric sounding stations. Safety systems were also installed in Fort Nelson and Sachs Harbour.

The Training Branch provided weather observing courses for staff assigned to the DEW Line and AES Weather Stations in the Arctic. Courses were held at the training centre in Winnipeg, Manitoba,

and the Transport Canada Training Institute in Cornwall, Ontario. The Branch worked with the N.W.T. Government training staff during the year and provided examinations for training courses of Observer-Communicators for Arctic Community Airports.

##### **Plans for 1983-1984**

Subject to approval, an iceberg surveillance service will be started. Also, a third aircraft and upgraded ice reconnaissance equipment will be ordered as the first step in significantly improving the ice information service provided to marine and offshore interests.

Recommendations resulting from the program evaluation of ice and marine weather services will be implemented.

Further improvements to the communication facilities to the northern stations will be limited in 1983-84 while structural changes are carried out in the South. Experiments with satellite-based communications to the North will be continued for both the collection and distribution of information.

Training Support Services for all weather-observing programs in the North will be provided at the same level as in 1982.

The computer and communications systems will be upgraded in the field and at the Ice Centre in Ottawa to improve ice prediction and enable ice information to be prepared and delivered without delay.

#### **Field Services Directorate**

##### **Responsibilities**

The Field Services Directorate (FSD) operates five data-gathering networks, a modern communications system, the Canadian Meteorological Centre (CMC), the Arctic Weather Centre (AWC), the Yukon Weather Office in Whitehorse, several weather service offices, the Beauport Weather and Ice Office at Tuktoyaktuk, satellite read-out stations, automatic stations, and scientific support offices. These provide up-to-date information, forecasts and warnings to most of the larger communities, as well as weather and consultation services to industries and environmental/regulatory agencies.

### **Review of 1982-83**

The HAWS and other AES isolated weather stations continued to serve as bases for scientific projects and field studies. RADARSAT (an international project comparing ice types and structure depicted in satellite imagery with ground truthing data) was supported at Mould Bay in July 1982 and April 1983. The Northern Ellesmere communications project was completed at Eureka by September 1982 and has operated well over the 1982-83 winter season. Telephone communication via satellite is now possible between southern Canada and Eureka.

AES continues its support in a number of areas such as: Energy, Mines and Resources seismology and geomagnetic programs at a number of Arctic weather stations; the Polar Continental Shelf Project (PCSP) activities in the high Arctic; air quality and carbon dioxide monitoring at Mould Bay and Alert; an ozone program at Resolute; and National Research Council's neutron monitor gamma-ray project at Alert. In the Spring of 1983, a number of expeditions were staged through Eureka, including the Solo North Pole Expedition, a trek to the pole by Ambrogio Fogar, PCSP's project CESAR along the northwest Ellesmere coastline and on the Polar pack ice, and several tourist flights to the Pole via Lake Hazen. The Canadian Meteorological Centre and Arctic Weather Centre prepared weather forecasts for these expeditions and projects. The provision of services generated considerable revenue for the Directorate. An up-dated schedule of charges for special services was prepared in March 1983.

Maintaining bases of operations in the Arctic is very costly, and renovation of facilities is continuous. The salt water de-salination plant at Eureka has not functioned smoothly, and a major overhaul is planned in 1983. A study of environmental conditions at Alert in 1982 has shown that it would not be feasible to relocate the aerological facilities adjacent to the airstrip. A new power house was constructed in the summer of 1982 at Mould Bay, and new hydrogen inflation facilities were completed in December 1982 at Sachs Harbour. The installation of a new modular weather station in Pond Inlet was postponed to the summer of 1983, and the weather caused major delays in constructing the new station at Norman Wells. Environmentally-controlled offices were constructed in 1982 for the aerological computer equipment (called ADRES) at Baker Lake, Eureka and Hall Beach.

Operations at Alert were reviewed in February 1982 at a biennial meeting of DND and AES officials. An agreement between Environment Canada (AES) and the USAF concerning DEW line operations was revised and signed in February 1983. Officials from AES and the Territorial Governments met in May 1983 in Toronto to review the operation of the Arctic "B" and "C" Airports program in the N.W.T. and Yukon since the NWT Government assumed responsibility for the training of Observer-Communicators on April 1, 1981.

Submissions have been prepared by FSD managers for several departmental and interdepartmental policy statements and northern resource initiatives, including Energy Research and Development, Environmental Studies Revolving Fund, the Indian and Northern Affairs Northern Hydrocarbon Paper, and a DOE Northern Policy Paper.

The Directorate continued to provide meteorological information, forecasts, and consultation services for a variety of programs and activities in the North. Weather services were provided throughout the forest fire season in Fort Smith and Whitehorse. A daily public weather

forecast was broadcast from the Frobisher Bay Weather Office, which continued to provide aviation weather services for flights over the Eastern Arctic and international flights to Greenland. The Resolute Weather Office supplied services for flights in the Queen Elizabeth Islands and in the Canadian sector over the Arctic Ocean.

The Beaufort Weather and Ice Office (BWIO) operated for the drilling season from June to late November 1982 out of Tuktoyaktuk. It will re-open in June 1983. BWIO activities continued during the winter of 1982-83 with the provision of surface wind forecasts out to 72 hours input to an ice prediction model developed jointly by AES and INTERA. The model was run all winter by DOME for five hours each day, seven days a week through a direct communications link from the AES Arctic Weather Centre in Edmonton to DOME's office in Calgary. All costs of this project to predict ice motion were recovered from DOME.

Meteorological data were acquired from 49 synoptic weather stations and 6 automatic stations. Data were also provided from 14 aerological stations. Eleven stations were added to the climatological network so that extreme daily temperatures, precipitation and other weather information are now provided from 104 locations in the Territories. The AP satellite receiving station installed in March 1982 in Whitehorse provide cloud imagery to the Yukon Weather Office.

Reports were obtained from seven ships during the navigation season. The more Arctic Aviation Weather Reporting Stations (AAWRS) were commissioned 1982 at Ross River and Teslin in the Yukon, and at Paulatuk, N.W.T. There are now 25 AAWRS operating in the Yukon and Northwest Territories - 7 in the Eastern Arctic, 6 in the Central Arctic and 12 in the Western Arctic. Contracts to

operate the meteorological programs and AAWRS with the local Inuit co-operatives at Pond Inlet and Cape Dorset are still in effect. AES performed routine equipment inspections of all AAWRS sites and trained Inuit Observer-Communicators on-site, as required. One Private Aviation Weather Reporting Station (PAWRS) is operating at Rae Point.

The Arctic Basin Buoy Program was launched in October 1981, when one buoy was dropped onto the Polar pack ice well north of the Beaufort Sea. In 1982, a dozen buoys were deployed in data-poor areas of the Canadian sector on three separate missions, i.e., six in May, two more in September, and another four in December. The buoys have an average lifetime of 18 months and are deployed by parachute by the Department of National Defence. Observed weather data are transmitted via polar orbiting satellites to an AES receiving facility in Edmonton, where observations are automatically entered onto communications circuits for use not only in Canada, but also by other nations. The program was discussed in detail by officials from Canada, the United States and Norway in March 1982. Five more buoys will be deployed in June 1983.

Regional Scientific Services Divisions provided consultative services, carried out applied research, and assessed the environmental effects of new developments. The Baffin Island Oil Spill experiments at Cape Hatt were supported again in 1982. Drilling in Hudson Bay has resulted in a preliminary assessment of the impact on AES networks and forecast services. A major project in 1982 was the review of the Environmental Impact Statement (EIS) relating to Beaufort Sea development.

The Mackenzie River Basin Study provided a report recommending siting for a hydrometeorological network in the southwestern corner of the N.W.T. in conjunction with the Inland Waters Directorate. Another major project was the study of the Artificial Island Land-fast Ice Problem in the vicinity of Tuktoyaktuk. Meetings were held with the local Hamlet Council, the Hunters and Trappers Association, scientists representing AES' Ice Branch, and with the three oil industry partners in the Beaufort Sea. The purpose of the meetings was to discuss and investigate changes caused in break-up/freezing patterns of land-fast ice due to the presence of artificial islands. A preliminary technical report was completed by the spring of 1983 on the effects of artificial islands on the land-fast ice regime near Tuktoyaktuk.

FSD headquarters and regional managers conducted regular site inspections, co-ordinated pool housing for approximately 70 employees, maintained major AES facilities and operations, staffed all stations with trained personnel, assisted relocating employees, co-ordinated safety programs, procured goods for northern shipments, provided support services to other departments and agencies, maintained a quality control program, collected revenues, and initiated special studies to evaluate programs and environmental conditions.

#### **Plans for 1983-84**

Although construction is behind schedule, a new upper air station will be built and the warehouse at Norman Wells relocated. The new weather station for Pond Inlet will be shipped from Montreal during sea supply. Fort Reliance will be operated with funding from Transport Canada. Plans will be developed for improved lodging facilities at Cambridge Bay and Hall Beach. The MARS II automatic station at Port Radium will be decommissioned, and a MARS I automatic station will be opened at a suitable site in the vicinity. Environmentally-controlled offices for the aerological computer equipment (ADRES) will be constructed at Coral Harbour and Mould Bay, and will be included in the expansion and renovation of the Operations Building at Alert.

The BWIO will operate at Tuktoyaktuk from June through to December 1983. It is planned to deploy 5 more buoys on the pack ice in November 1983. Installation of the vector computer at CMC will start in the Fall of 1983.

Studies on the HAWS sites will be completed and recommendations will be reviewed for implementation as soon as practicable. A Memorandum of Understanding will be signed by DOE, DOT and DND on the communications system for Northern Ellesmere Island. DEW line and Arctic Community Airports programs will be maintained, and improvements in training and communications will be undertaken. Three additional AAWRS sites will be commissioned at Beaver Creek, in Yukon, and at Fort Liard and Fort Norman in the Northwest Territories.

FSD will continue to provide up-to-date weather information, forecasts, warnings and scientific consultations for Arctic projects and activities, as well as climatological information for northern planning and development. Instruments, networks and communications systems will be inspected and maintained. Other special support services will be provided, on a cost-recovery basis, to assist agencies and expeditions in completing their field projects in the North.

## External Affairs

A number of studies began in 1982 and 1983. These will have a bearing on AES programs in the Arctic. A Human Resource Planning report was completed in 1982, and implementation of policies, systems and programs to promote effective human resource management will be planned in 1983-84. A level of service study now underway is to be completed by July 1983. It will include recommendations on the appropriate level of meteorological services that the federal government should provide Canadians through general revenue. An evaluation assessment study of public, economic and aviation weather services is being conducted in 1983-84. Subsequent to the Arctic Aviation Weather Service Requirements Study, a joint DOE/DOT TB submission is asking for resources to implement the recommendations calling for additional aviation weather services. The Canadian Forecast System Review was undertaken in 1982. AES management is now reviewing the report. Future scenarios are being discussed; costs and impacts are being considered; and operational personnel are commenting on the proposals. Future plans will be developed by the Fall of 1983.

The second phase of the study on living and working conditions in isolated environments, which began in the Spring of 1983, consists of an intensive study of AES personnel and procedures at each station. In 1983, a consultant with extensive Arctic expertise will review the roles of the Weather Stations at Mould Bay and Eureka in meeting Canada's requirements and international responsibilities for providing weather data and services and carrying out atmospheric research. This review will also consider the logistical support these stations provide to various scientific and exploration activities in the Arctic.

The Department of External Affairs' activities in the North are associated with the operations of foreign governments and their agencies. The Department advises on matters having foreign policy implications, maintains a co-ordinative and operational role in matters of international law and policy relating to the Arctic and negotiates agreements with other countries proposing to carry out activities in the North.

Within the Department of External Affairs, a number of bureaux handle different matters relating to the Arctic: The Office of Resource Industries, Energy and Food, through its Energy and Environment Division, co-ordinates Canadian policy on the international aspects of energy and environment matters in the Arctic. It also facilitates contact and co-operation between Canadian government departments and agencies concerned with these matters and their foreign counterparts. The Office closely monitors trends in the international oil, natural gas and electricity markets that affect the development of energy projects in the Arctic and co-ordinates activities related to the other international aspects of these projects. The Office also co-ordinates Canadian involvement in international environmental issues affecting the North and is the focal point for Canadian participation in multilateral organizations, (such as the Convention on International Trade in Endangered Species of Flora and Fauna, the OECD and UNEP) that address these matters.

The Legal Affairs Branch is responsible for securing international recognition of Canada's sovereignty in the Arctic and for ensuring that all activities and programs in the Canadian Arctic either reinforce or, at least, are not inconsistent with Canadian sovereignty over the waters and islands of the Arctic Archipelago. As part of carrying out this task, the Director of the Legal Operations Division of the Legal Affairs Branch chairs the Interdepartmental Panel on Arctic Waters. The Branch, in consultation with departments and agencies having specific responsibility for surveillance of coastal waters and for enforcement activities, is concerned with vessels passing through Canada's Arctic waters. Specifically, it is concerned with what Canada does to protect the Arctic marine environment and with enforcing the provisions of the Arctic Waters Pollution Prevention Act.

The Bureau of European Affairs is responsible for co-ordinating relations with the Nordic countries and the USSR. It handles many of the exchanges and activities between Canada and those countries on issues related to the North. The Bureau heads the Circumpolar Affairs Panel created in April 1979, to promote better co-ordination within the Department when dealing with foreign policy questions relating to the North. Canada and the USSR are currently working together to develop a bilateral program of exchanges on questions concerning the Arctic.

The Bureau of United States Affairs co-ordinates Canada-United States relations in the Arctic. It is involved in matters having to do with areas such as science, technology, communications, energy, environment and transportation questions (including the Northern Gas Pipeline), particularly along the 1 000 km Alaska/Yukon border. The Bureau is also concerned with northern environmental questions such as trans-boundary pollution, migratory birds and wildlife, bilateral co-operation in creating and managing parks and historic sites, designating and managing "wild" rivers and managing trans-boundary rivers. In transportation, it has been responsible for co-ordinating the foreign policy aspects of such subjects as the reconstruction of the Haines-Alaska Road (Shakwak Project), and the White Pass and Yukon Railway.

# Federal Environmental Assessment Review Office

The Bureau of International Security Policy and Arms Control Affairs provides liaison between foreign governments and various Canadian government departments (principally the Department of National Defence) in matters relating to protecting Canada's security and sovereignty in the Arctic. Most significant in this regard is the co-ordinating role the Bureau plays in Canadian-American cooperation in the Arctic for the common defence of North America. A specific example is the joint Canada/U.S. operation of the Distant Early Warning Line of the North American air defence system.

The office of the Chief of Protocol, acting jointly with the Department of Indian Affairs and Northern Development, organizes an annual tour of the Arctic for approximately 20 heads of diplomatic missions accredited to Canada. Thus, each head of a diplomatic mission is virtually assured of an opportunity to visit the Arctic during his or her tour of duty in Canada.

The Public Affairs Branch distributes a variety of material on the North through its diplomatic missions in foreign countries. Recent examples of publications include *Government Activities in the North* and *North/Nord* magazine. Other materials distributed include the films *Arctic Quest* and *Northern Games* and various photographs, videotapes and policy documents on land claims, NEB decision, etc. These materials keep foreign governments, journalists, the public and Canadian personnel working abroad abreast of developments in Canada. Under departmental auspices, 13 journalists and "opinion-formers" from Argentina, France, the Netherlands, South Africa, Venezuela and Yugoslavia made familiarization tours of northern Canada in 1982-83. Topics covered during these northern trips included resource exploration and exploitation, constitutional development, the native way of life and the environment.

The Bureau of International Cultural Relations is responsible for travelling exhibitions of Canadian art, including two collections of Eskimo prints from the Department's permanent collection and another collection, *Inuit Retrospective*, belonging to the National Museum of Man. Its Cultural affairs Division-Arts promotion recently arranged with the Department of Indian Affairs and Northern Development to circulate that Department's collection of Inuit and Indian art.

The Passport Branch distributes application forms and detailed instructions for completing them through post offices, regional offices of other federal departments and agencies and travel agencies. The application form lists the 18 Passport Offices across Canada, which the public can reach through a toll-free telephone system installed across the country. More and more people are using this service as new telephone directories are published with the new passport telephone listings. The system should be fully operational by the end of 1983.

Departmental information services extend to the two Territories. Each year, a Commonwealth Day poster and teacher's guide are distributed to schools in the North. Many N.W.T. and Yukon residents are on departmental mailing lists for copies of press releases, speeches and statements on Canadian foreign policy and international relations. The Department's travel advice booklet *Bon Voyage*, but . . . is distributed in the North. Occasionally, group visits to the OECD (in Paris), NATO and the EEC (in Brussels) include a representative from either the N.W.T. or Yukon.

## Responsibilities

In 1973, Cabinet established a federal Environmental Assessment and Review Process (EARP) to assess the environmental consequences of federal projects and to consider these findings in future planning and decision-making.

EARP covers projects that are initiated or sponsored by federal departments and agencies, and which either need federal funds or involve federal property. All federal departments and agencies are subject to the process, except proprietary Crown corporations and certain regulatory agencies that are invited to participate.

EARP is administered by the Federal Environmental Assessment Review Office (FEARO). Its Executive Chairman reports to the Minister of the Environment. Under the Process, departments and agencies screen proposed projects for potential adverse effects. If the effects are not apparent, a more detailed examination known as an initial assessment is made. FEARO encourages organizations to solicit public response in the early stage of planning any projects that may be environmentally sensitive. If either the screening or the assessment indicates that potential significant effects could occur, the project is referred to FEARO for a formal review. Each project is reviewed by an independent panel appointed by the Minister of the Environment.

A panel reviewing a project publishes guidelines for the Environmental Impact Statement (EIS) to be prepared by the organization planning the project. As part of its review, the panel holds public meetings and, subsequently, submits a report to the Minister. The report describes major potential environmental effects and contains conclusions and recommendations. Decisions on the panel's recommendations are made by the Minister of the Environment and the Minister of the initiating or sponsoring department.

### **Review of 1982-83**

The Alaska Highway Gas Pipeline panel made its final report on the Yukon portion of the pipeline from Alaska to the United States. It concluded that preliminary environmental planning was adequate. Several recommendations were aimed at minimizing potential negative effects. Specific recommendations were made to the Northern Pipeline agency that could be carried out during the two-year project delay announced by the proponent.

The panel for the Slave River hydro-electric proposal visited the proposed project area in June. In October and November, it held public meetings on the draft Environmental Impact Statement guidelines.

The panel studying the hydrocarbon proposal for the Beaufort Sea submitted an interim report to the Environment Minister in April, stating its preliminary thoughts on the review and outlining public concerns. In November, the proponents issued their EIS and, after a 90-day public review, the panel issued a statement identifying four major deficiencies in that document. Specifically, the panel asked for more information on:

- the social and economic effects of oil and gas production and transportation on the northern native communities;
- the broad environmental effects of the project and the steps proposed to overcome certain cumulative effects; and
- the size and nature of potential oil spills and the effectiveness of clean-up methods.

The panel also asked for separate summaries of how the project would affect three zones: the Beaufort Sea-Mackenzie Delta, the Mackenzie Valley, and the Northwest Passage.

Although it issued a statement of deficiencies, the panel commended the oil companies for their efforts in dealing with the vastness of the project, given the limited amount of northern research available.

It expressed its appreciation for the extensive commentary on the documents provided by northern communities, native organizations, special interest groups, federal and Territorial government agencies, and the public.

The panel received position papers from 15 government departments and agencies and the two Territorial Governments. It hired 13 technical specialists with expertise in such subjects as ice-breaker design, risk analysis, oil spills, and socio-economics. These experts prepared reports and are available to advise both the panel and participants in the review. (Under the pilot funding program run by a committee independent of the panel, \$647 500 was allocated to 31 groups to facilitate their involvement in the review process.)

The panel also released procedures for its forthcoming community and general public meetings. Community sessions will be informal and non-technical so that members of smaller communities that could be affected will be able to talk to panel members. On the other hand, general sessions will be more structured and will usually be held in larger centres. They will be open to anyone who wishes to make a presentation on either technical or non-technical subjects.

### **Plans for 1983-84**

The Federal Environmental Assessment Review Office and the Government of Alberta are discussing a co-ordinated review of the Slave River hydro project. A co-ordinated approach could reduce documentation arising from separate reviews, reduce public inconvenience and costs, and allow review activities to meet the requirements of provincial and federal review agencies. The panel has postponed release of the guidelines to discuss this review strategy.

When the oil companies respond to the Beaufort Sea panel's deficiency statement, their response will be distributed, and 30 days will be available for comment. The panel will then determine whether the EIS provides a basis for full and fair discussion of the proposals. If so, the panel will schedule three months of community and general sessions in northern and southern Canada.

### **Responsibilities**

Labour Canada administers the Canada Labour Code and is responsible for maintaining a legislative framework covering industrial relations in the federal jurisdiction. It also establishes minimum standards for wages, working conditions, safety and health and helps to resolve problems facing individuals or groups in these areas. Labour Canada works to minimize and resolve labour-related conflict within the Department's legislative framework.

Employees or employers engaged in any provincial, national or international work or business fall with Labour Canada's jurisdiction.

Because labour affairs are becoming more and more complex, Labour Canada maintains offices in major centres across the country to make the Department's services more accessible to those who need them. These offices have primary responsibility for implementing departmental programs, while maintaining close liaison with headquarters.

### **Mediation and Conciliation Services**

Through the appointment of Conciliation Officers, Conciliation Commissioners and Mediators, the Mediation and Conciliation Branch provides a third-party to help resolve industrial disputes in the federal jurisdiction (including the Territories).

This activity covers collective bargaining breakdowns and other problems with labour-management relationships.

### **Review 1982-83**

During the fiscal year, the Mediation Service handled 25 collective bargaining disputes affecting Territorial employees. Seventeen of these disputes were resolved without a work stoppage. At fiscal year-end, eight disputes were pending. These involved companies engaged in mining, road and water transportation, construction, municipal services, communications and food services.

### **Plans for 1983-84**

Normal planning to meet responsibilities

### **Arbitration Services**

The Branch plays a role in resolving disputes arising over the interpretation, application or alleged violation of collective labour agreement provisions.

### **Review 1982-83**

During fiscal year 1982-83, Arbitration Services received two applications from parties in the North for ministerial appointments of either arbitrators or arbitration board chairman.

One arbitrator was appointed, and the remaining case was pending as at March 1, 1983.

### **Plans for 1983-84**

Normal planning to meet responsibilities. The demand for third party assistance comes directly from the parties to collective agreements. As in the past, any requests from the North will be handled as part of the Arbitration Services' general workload.

### **Mountain Region**

The following summarizes the activities carried out by the Whitehorse Office of Labour Canada, Mountain Region, in the North (Yukon Territory and Northwest Territories). This report covers the 1982-83 administration of Part III and Part IV of the Canada Labour Code, the Treasury Board's Occupational Safety Policies, the standards and guidelines in the Federal Public Service and the Fair Wages and Hours of Labour Act.

A Labour Canada office has been operating in Whitehorse, Y.T. since August 2, 1978. It is staffed by a Labour Affairs Officer and support staff and serves both Yukon and the Northwest Territories. A Zenith toll-free line between Whitehorse and six major N.W.T. communities was installed to provide better service to the area. As required, staff from both the Vancouver and Edmonton offices supplement the regular staff.

### **Federal Contracts**

During the fiscal year, 26 inspections were carried out by the Labour Affairs Officer from Whitehorse (Of these, two were made in the Northwest Territories and 24 in the Yukon Territory.) Wage adjustments were collected from 10 contractors as a result of these inspections; violations were corrected, and \$32 096.24 was recovered for 57 Yukon Territory employees and one in the Northwest Territories.

Annual surveys of construction wages were conducted in the Northwest Territories and the Yukon Territory to provide enough wage data to establish prevailing wage rates for inclusion in Labour Conditions Schedules for Federal Government Contracts. These rates are also made available for use by the Yukon Territory Labour Standards Branch and Contracts Tendering Department.

### **Employment Relations and Conditions of Work**

#### *Labour Education*

Labour Canada's Financial Assistance Program provides financial support to legally constituted union organizations in Canada. This support is used for the education and training of existing and potential union leaders so that they can carry out their union-related responsibilities and fulfill their community roles effectively.

One labour organization from the North was awarded a labour education grant in 1982-83. The Northwest Territories Teachers' Association, representing 748 members, received \$1 047.00. The grant was applied to a two-day conference to familiarize the officers with negotiations, grievances, joint consultation procedures, Government regulations and welfare plans.

#### *Plans for 1983-84*

Normal planning to meet responsibilities.

### **Quality of Working Life Program**

The Quality of Working Life Program (QWL) encourages Canadian organizations that promote innovative practices which respond to changing economic and social conditions in the workplace. For example, the Program supports organizations whose employees and management co-operate to improve working conditions. Program goals include increasing employee work satisfaction, making better use of human resources, and improving relations between labour and management.

#### *Plans for 1983-84*

Normal planning to meet responsibilities.

### **Industrial Relations Information Service (IRIS)**

IRIS is a service intended primarily for those involved in labour relations and collective bargaining. It is a "one-stop" information service for parties on both sides of the bargaining table and provides prompt answers to questions on industrial relations.

IRIS is available to individuals and organizations in Yukon and the Northwest Territories.

#### *Plans for 1983-84*

Normal planning to meet responsibilities.

### **International Relations Division**

The International Relations Division has the lead responsibility in matters relating to Canada's participation in the International Labour Organization. Among the Division's principal activities is monitoring international labour standards resulting from the ILO's Conventions and Recommendations.

Given Canada's jurisdictional framework with respect to labour affairs, a long-standing practice has been to consult with provincial and Territorial authorities on these standards. These consultations are carried out on an on-going basis, and culminate in the Annual Meeting of Deputy Ministers on ILO matters. Top labour administration officials from Yukon and the Northwest Territories are also invited to attend and provide input.

#### *Plans for 1983-84*

Normal planning to meet responsibilities.

# Public Service Commission

# Public Works Canada

## Labour Data Branch

The Labour Data Branch carries out an annual survey of wages, salaries and conditions of work in establishments with 20 or more employees. The October 1, 1982 survey included 41 establishments in the Yukon Territory and 53 in the Northwest Territories. The survey will be carried out again in 1983.

Information on work stoppages due to strike and lockouts in the two Territories is maintained on a continuing basis. In 1982, no work stoppages were reported.

The Branch maintains a file of collective agreements that includes 63 agreements covering some 8 601 employees in the Territories, excluding those employed in construction.

## Plans for 1983-84

Normal planning to meet responsibilities.

## Legislative Analysis and Research Division

The Division collects and analyses Canadian legislation affecting employer-employee relations and physical working conditions. Through its publications, it reports legislative developments pertaining to occupational safety and health and workers' compensation, employment standards adopted in Yukon and the Northwest Territories, and federal legislation applicable in the Territories. The Division also prepares an annual report for the Canadian Association of Administrators of Labour Legislation (CAALL), an organization that brings together representatives of the federal and provincial departments of labour and representatives from both Territories. Finally, upon request, the Division provides government officials, organizations and individuals in the Territories with information on the labour legislation in the various jurisdictions.

## Plans for 1983-84

Normal planning to meet responsibilities.

## Responsibilities

The Public Service Commission of Canada (PSC) is the central agency accountable to Parliament for administering the Public Service Employment Act (PSEA). It ensures that the merit principle is upheld in staffing practices and ensures equality of access to the Public Service for all Canadians. The Commission also provides an appeal mechanism for appointments that are challenged and audits the manner in which individual departments carry out their staffing activities.

The Commission administers the Act as it relates to the political activities of public servants.

## Review 1982-83

The Staffing Branch of the Public Service Commission, which has been fully operational in the Northwest Territories and Yukon for over four years, continued to provide a full range of staffing services to the federal departments north of 60°.

In 1982-83, the district staffing offices in Yellowknife and Whitehorse recruited northern residents to fill most appointments, in keeping with the Staffing in the North Policy. District offices continued to provide employment information and counselling services to applicants for positions in the North.

## Western Region

### Review 1982-83

#### Building Construction

Studies were carried out to determine the requirements for proposed new Nursing Stations in Pelly Bay, Fort Liard, Fort Wrigley and Fort Norman. Studies to establish a master plan for the General Hospital in Inuvik are also being carried out.

Design work was completed for proposed renovations to the Nursing Station in Aklavik and the hospital and nurse's residence in Inuvik. New roofs were installed on nursing stations in Fort Franklin and Coppermine.

New RCMP married quarters were constructed in Tuktoyaktuk, Aklavik and Ft. McPherson. Renovations to another unit were completed in Ft. McPherson. In Rae, a new RCMP duplex was constructed for \$290 000, and in Yellowknife, a \$40 000 warehouse was built.

#### Plans for 1983-1984

The master plan for the general hospital in Inuvik will be completed.

Design will be completed and construction will start on new nursing stations in Pelly Bay, Fort Liard, Fort Wrigley, Fort Norman and Sanikiluaq.

Renovations to the nursing station in Aklavik and the hospital in Inuvik will be completed.

Design will be completed and construction will start for new Indian and Northern Affairs District Operational Offices in Fort Smith, Yellowknife, and Frobisher Bay.

Design work will start for the proposed new Government of Canada Building in Fort Smith and Yellowknife.

A new married quarters will be built for RCMP at Providence for \$160 000, and two more at Tuktoyaktuk, for an estimated cost of \$350 000.

## Pacific Region

### PWC Accommodation Program

PWC accommodation programs (including involvement in OGD projects) for 1982-83 have been limited to minor leasing activities and preliminary planning for proposed future accommodation projects.

Work on new border crossing facilities at Beaver Creek has started, with expenditures in 1982-83 of \$390 000. The total approved funding for this project is \$2.6 million. Scheduled completion is October 1983. In conjunction with this project, a separate OGD project, funded by Revenue Canada, Customs and Excise, involves the construction of residential housing units at an estimated total cost of approximately \$640 000. Minimum expenditures have been recorded in 1982-83 due to delays in awarding a contract. However, the project is expected to be completed on time by October 1983.

Other projects such as energy conservation (both PWC and EM&R funding) have minimal expenditures recorded in 1982-83. However, a projected \$400 000 will be spent in 1983-84.

PWC planned projects for future years include a new GOC Building in Whitehorse (estimated cost \$16.8 million) with scheduled completion in 1986-87. Preliminary data collection and on-site visits carried out in 1982-83 will allow the feasibility analysis to be completed early in 1983-84. Subject to approvals and the availability of funding, construction is expected to begin in 1985-86.

## Property Administration

### Review of 1982-83

Expenditures were reduced to a minimum in line with the Government restraint program. Projects were either reduced in scope or deferred until funding becomes available.

In the Housing program, 415 units were provided to 30 agencies at pool locations. The following projects and maintenance programs were completed in 1982-83.

• Insulation of 38 basements completed	\$ 66 000
• Preventative maintenance program	\$ 90 000
• Replacement of floor coverings	\$ 40 000
• Interior/exterior repainting	\$ 40 000
• Refurbishing and minor repairs	\$230 000

Crown-owned buildings provide 20 195 m<sup>2</sup> of accommodation for 20 agencies throughout northeastern B.C. and the Yukon Territory. The projects listed below were completed in 1982-83.

• Upgraded loading facilities Dawson Creek Federal Building	\$ 7 800
• Upgraded fire alarm system Whitehorse Federal Building	\$ 5 100
• Repaired roof flashings Whitehorse Federal Building	\$ 7 000
• Repaired pilings Dawson City Federal Building	\$14 000
• Repairs to CPC owned facilities	\$22 000

Leased premises provide 4 873 m<sup>2</sup> accommodations for 14 agencies throughout northeastern B.C. and Yukon Territory. For 1982-83, rental payments and lease terms required expenditures of \$550 000.

## Customs and Excise

### Responsibilities

Customs controls the international movement of goods, persons and "conveyances" (vehicles, airplanes, ships, etc.) and collects duties and taxes due on imports.

Excise administers the provision of the Excise Tax Act, the Excise Act, the Importation of Intoxicating Liquors Act, and related regulations. The Branch issues licences, provides tax information, and audits the records of businesses subject to payment of federal sales and excise taxes.

### Review 1982-83

#### Yukon

To accommodate traffic into and out of Canada in Yukon, Revenue Canada maintains Customs Offices at the port of Whitehorse, and at Beaver Creek and Pleasant Camp. Three seasonal offices are also located at Little Gold, Fraser, and Dawson City. The R.C.M.P. at Old Crow also provide Custom Services.

At Whitehorse, the capital and largest city in Yukon, Customs clearance is provided for goods and passengers arriving by highway, air and rail.

Excise carries out its responsibilities in Yukon by having Excise auditors periodically visit licensed businesses in such communities as Whitehorse, Ross River, Keno Hill, Dawson, Watson Lake and Faro. (There are 32 Excise licensees in the Territory.) In 1982-83, Excise auditors visited licensees in Whitehorse and Watson Lake to conduct audits, provide tax information and, as required, assist in processing refund claims.

# Royal Canadian Mounted Police

## Northwest Territories

Customs personnel in the Northwest Territories are stationed at Frobisher Bay on Baffin Island and at Inuvik, in the Mackenzie Delta area. Customs coverage has, nominally, also been extended to include 44 other locations, where representatives of other government departments act on behalf of Canada Customs.

Frobisher Bay is staffed by one full-time Customs Inspector reporting to the Ottawa Region; Inuvik is staffed by one full-time Customs Inspector who reports to the Alberta Region.

The RCMP provide Customs service at 38 other locations in the N.W.T. In addition, staff from other government departments are designated "Acting Customs and Excise Enforcement Officers" at the following locations:

### *Royal Canadian Mounted Police*

Tuktoyaktuk  
Nanisivik  
Resolute Bay

### *Department of National Defence*

Cape Dyer  
Cape Parry  
Hall Beach

### *Department of Environment*

Eureka  
Mould Bay

### *Department of Transport – Canadian Coast Guard*

Little Cornwallis Island

The international movement of goods and people increased in the North for 1982-83. In view of the current high level of economic and political interest in the region, this trend can be expected to continue for the foreseeable future. The emphasis remained on offshore oil and gas exploration and, throughout the year, the "Oil Country Goods Review" project team continued its examination of all Customs functions pertaining to the handling of offshore drilling equipment.

In 1982, a study of all matters relating to administering and enforcing Customs legislation and regulations north of 60° was started. A report, entitled *Customs Activities in the North* (C.A.I.N.), was subsequently completed in early 1983. It provided the information, analysis and preliminary recommendations required to plan the best way to satisfy present and future demands for Customs services in the North.

### **Plans for 1983-84**

A project team will be assembled in the new fiscal year to plan and oversee the implementation of the recommendations made in the C.A.I.N. report.

## "G" Division

### *Northwest Territories*

### **Responsibilities**

The Royal Canadian Mounted Police "G" Division comprising three sub-divisions and 38 detachments provides policing services to the Northwest Territories under contract to the Territorial Government. These services, with headquarters in Yellowknife, encompass both Federal and Territorial police responsibilities. Three air detachments at Yellowknife, Inuvik and Frobisher Bay, supply air support service.

### **Review 1982-83**

Although the N.W.T. continues to have the highest crime rate per capita in Canada, overall crime dropped during 1982-83 by almost 16 per cent. Crimes against persons declined by 4 per cent, crimes against property by 15 per cent, and fewer offences under the Criminal Code accounted for the rest of the decline. Drug offences, however, have risen by 2 per cent. Most serious crimes occurring in the Northwest Territories are related to alcohol abuse. (The volume of liquor sales increased by 13 per cent in 1982-83.)

The Regular Patrol Service (R.P.S.) in settlements that do not have permanent detachments is working well. There are 63 settlements in the N.W.T., of which 2 are served by R.P.S. Twelve of these have police patrol cabin facilities.

The Division now has a truck and camper unit located at Inuvik, which allows officers to regular by patrol the Dempster Highway between Inuvik and Dawson City, Yukon.

Efforts continued in 1982-83 to recruit native people. As of the end of 1982, there were three vacancies for Special Constables in the Central and Eastern Arctic. Currently 10 positions are filled. The "Option 3 (B) Special Constable Program" is continuing. During 1982-83, three applicants were accepted and posted to Pangnirtung, Sanikiluaq and Frobisher Bay. We now have six special constables under this Program.

About \$1.1 million was spent on new construction. During the past another year, \$1.8 million was spent on new facilities for personnel and on replacing old buildings. Energy, Mines and Resources provided another \$357 000 for energy retrofit on several units. An official opening of the new detachment building at Pine Point was held in May 1982.

#### **Plans for 1983-84**

Fiscal restraint in 1983-84 has limited new construction to married quarters at Fort Providence.

Plans are underway to open outpost detachments at Coral Harbour and Hall Beach.

#### **"M" Division**

##### **Responsibilities**

The Royal Canadian Mounted Police (R.C.M.P.) in "M" Division (Yukon Territory) provide all policing services to the Yukon Territory. Under contract to the Territorial Government, the R.C.M.P. enforce the provisions of the Criminal Code and the Territorial Acts. Through contract and non-contract personnel, the R.C.M.P. also fulfill a Federal role, being responsible for enforcing various Federal Statutes and Regulations.

Currently, the Force has 115 Regular members in Yukon (including 16 Special Constables), 7 Civilian members and 17 Public Service Employees. Detachments are located at Old Crow, Dawson, Mayo, Beaver Creek, Carmacks, Faro, Ross River, Haines Junction, Whitehorse, Carcross, Teslin and Watson Lake. A sub-detachment is located at Pelly Crossing. Headquarters of "M" Division is in Whitehorse.

##### **Review of 1982-1983**

The number of non-traffic Criminal offences committed in Yukon showed no significant change from the previous year. However, Federal Statute offences increased by 88 per cent.

Criminal Code traffic offences decreased by 6 per cent in 1982, while the number of Territorial Traffic Offences increased by 22 per cent. The number of reportable traffic accidents decreased by 328, from 1 506 in 1981, to 1 178 in 1982. There were 10 traffic fatalities in 1982.

The native Policing Program for the Yukon Territory employed 9 Native Special Constables at various Detachments. While the long-range goal is still to employ one Native Special Constable at every Detachment outside Whitehorse, and four at the Whitehorse Detachment itself, due to economic conditions, the four positions at Whitehorse have not been filled.

The On-the-Job Training Program, sponsored by the Department of Indian and Northern Affairs, has again been successfully used to prepare potential Native Special recruits and clerk/steno trainees for employment inside and outside the Force.

The Summer Student Employment Program hired four University Students as Supernumerary Special Constables during the summer of 1982. The Division will continue with the Program in 1983.

The R.C.M.P. Training Program was restricted in the number of courses held over the past year, because of financial restraints in all departments. Only those courses considered most urgent were given. These included Cardio-Pulmonary Resuscitation for operational personnel and Criminal Investigators Course, which was also attended by a member of the Territorial Game Branch.

During the year, a new Detachment building was constructed at Haines Junction, and renovations to the Detachment at Teslin provided more cells. An existing three-bedroom house in Carcross was bought for use as married quarters.

##### **Plans for 1983-1984**

A new sub-detachment office building with cells will be built at Pelly Crossing, with completion scheduled for June 1983. When the building is finished, a Native Constable will be transferred there to command this Sub-detachment.

Throughout the year, it is intended to transfer five officers from the Territorial Policing Services because of the decline in both the population of Yukon (-6%) and the incidence of crime reported (-10%) during the previous year.

#### **Government Relations Branch**

The Government Relations Branch provides advice, co-ordination and liaison on transportation policy between Transport Canada and the provincial and Territorial governments.

The former Arctic Transportation Directorate was disbanded, and its Yellowknife field office closed in June 1982. In its place, a northern desk was established in the Government Relations Branch at Ottawa Headquarters.

A Northern Transportation Conference was held in Whitehorse, Yukon Territory, October 5-7, 1982. This conference was co-sponsored by Transport Canada, DIAND, the Governments of Yukon and the Northwest Territories, and the Canadian Transportation Research Forum. The Branch represented the Department's interest by placing a member on the Conference Board of Directors and providing secretariat services.

The Branch is responsible for co-ordinating the Department's native land claim negotiations. Accordingly, it was active in the Council for Yukon Indians (CYI), Committee of Original Peoples' Entitlement (COPE) and Tunavik Federation of Nunavut/Inuit Tapirisat of Canada (TFN/ITC) claims.

Much time was spent on developing a new Northern Housing Policy for the Treasury Board's consideration. A standing committee (representing all concerned federal departments and agencies) and Treasury Board staff are developing the new Policy.



Government  
of the  
Northwest  
Territories

## Commissioner's Report

The continuing development of the Executive Committee as the cabinet of the Territorial Government, the coordination of programs across all regions, and an ongoing dialogue with residents in as many communities as possible, were the principal thrusts of the Commissioner's activities in 1982.

Following discussions with the Elected Leader and executive members, Commissioner Parker announced three ministerial portfolio changes and a realignment of reporting relationships between various boards and agencies and Executive Committee members. Elected executive members were named responsible for reporting to the Legislative Assembly for departments currently reporting to the Commissioner and Deputy Commissioner. A Ministry of Culture is being established to provide better coordination in the area of language and cultural projects and activities. The Honourable George Braden was appointed minister responsible for the status of women in the Northwest Territories.

The Commissioner, meanwhile, retained executive responsibility for two departments - Information and Personnel.

The Executive Committee, chaired by Mr. Parker, considered matters pertaining to constitutional and political development within the NWT, energy and resource development, and the Government of the NWT restraint program.

The Commissioner opened the seventh session of the Ninth Assembly of the NWT Legislative (Yellowknife February 2); the eighth session of the Legislative Assembly (Inuvik, May 11) and the ninth session in Yellowknife, November 2.

The Commissioner joined the Honourable John C. Munro, Minister of Indian and Affairs and Northern Development, on a visit to the Baffin communities of Frobisher Bay, Pond Inlet, Arctic Bay, Nanisivik and Igloolik. The minister released the Lancaster Sound Green Paper at Pond Inlet, and heard comments and concerns from Eastern Arctic residents and leaders.

The Commissioner took part in the official opening ceremonies of the Fort Good Hope community centre, the Tungsten recreation centre and the new William McDonald junior high school in Yellowknife.

The Commissioner's Award for public service at the highest level was presented to Sarah Simon at a community feast in Fort McPherson for her work in strengthening the role of the church in the community, her service to the people of the Western NWT, and her work in furthering the use of the Loucheux language. At Rankin Inlet, Mr. Parker presented the Commissioner's Award to Father Theophile Didier for his excellent work in the Inuit language.

## Deputy Commissioner's Report

During 1982, Robert S. Pilot, the Deputy Commissioner continued efforts to streamline operations and improve accountability of areas within his responsibility.

The Deputy Commissioner is responsible for the Department of Public Works, regional operations, the capital planning committee and the audit committee. He is the chairman of the NWT Housing Corporation Board of Directors and on behalf of the Executive Committee provides direction to the housing implementation group.

A major reorganization was implemented in the Department of Public Works to strengthen management and to increase awareness of departmental policies and procedures.

Emphasis was placed upon civil emergency planning as response plans were developed and successfully tested for a number of municipalities and regions. A new disaster compensation policy was utilized to assist the residents of the Aklavik area following severe spring flooding.

Capital planning for the Government of the NWT underwent major development as initiatives were taken to synchronize the newly devised system with that of the federal government.

The Territorial Government's housing policy proved successful in its early stages as employees increasingly opted for private home ownership in the NWT.

Following direction given by the Legislative Assembly the Deputy Commissioner undertook the redrafting of the Northern preference policy for the Government of the NWT. Under the new policy, government expenditures will increasingly benefit businesses providing continuous service to the residents of the NWT.

## Justice and Public Services

### Minister's Report

George Braden, as the Minister responsible for Justice and Public Services, continued to emphasize the need for the department to be aware of and to be responsive to concerns of residents.

The department strengthened its capabilities in areas that reflect the priorities of the government. In 1982, the department appointed a senior energy counsel responsible for providing full legal services to the Energy and Resource Development Secretariat and a constitutional lawyer responsible for providing legal services on constitutional matters to the government. The department also continued to play a substantial role in constitutional matters affecting the Northwest Territories.

The police services agreement, under which police services are provided by the Royal Canadian Mounted Police throughout the Northwest Territories, was executed by the minister and the Solicitor General of Canada in April, 1982. The agreement authorizes the Minister to set the priorities and goals for police services in the Northwest Territories.

The mining inspection services program staff was increased and modern mine rescue equipment was purchased

## *Directorate*

The Directorate is responsible for providing overall co-ordination, planning and direction for all programs and services rendered by the department.

In June 1982, a seminar on the Charter of Rights and Freedoms under the new Canadian Constitution was held in Yellowknife to which all members of the Law Society of the Northwest Territories were invited.

An emphasis on program decentralization was maintained with positions located in Hay River, Inuvik and Frobisher Bay.

Over the course of the year, the directorate placed emphasis on the need to enhance public legal information and undertook specific studies in the areas of family law and assistance to victims of crime.

## *Legal Division*

The Legal Division provides legal advice and services to all government departments, boards, the Executive Committee and the NWT Housing Corporation.

The public trustee office, provides for the administration of estates or trusts of infants, mentally incompetents and certain intestates. The public trustee has approximately 335 estates and trusts under administration.

The Division administers the criminal injuries compensation program in accordance with the Criminal Injuries Compensation Ordinance.

## *Legislation Division*

The legislation division is responsible primarily for the preparation of legislation for submission to the Legislative Assembly. In addition, all regulations and Commissioner's Orders are processed. Legal opinions concerning legislation or regulations are frequently prepared by legislative counsel. The Division publishes the Northwest Territories Gazette as well as a periodic legislative summary and collections of ordinances and regulations.

## *Court Services*

The court services division provides the necessary administrative support to the Supreme Court and the Territorial Court of the Northwest Territories, and comprises the Sheriff's office, court registries, court reporters and the Inspector of Legal Offices.

This division completed a training manual for justices of the peace. The manual will be translated into Inuktitut and other native languages.

Regional training seminars for justices of the peace were planned during the year.

A consulting firm was hired to examine the administrative aspects of the court services division with a view to improving the service and eliminating unnecessary expenditures.

## *Legal Registries-Land Titles*

This section is responsible for incorporating both profit and non-profit corporations, as well as maintaining a registry of corporation created outside, but operating within the Territories.

The land titles section administers a Torrens system of land registration. Ownership of and interests in privately owned lands are established by the filing or registration of documents in the land titles office.

Interests in personal property are protected by proper filing procedures. Declarations of partnership or sole proprietorship are also filed in the document registry.

This section also administers the provisions of the Securities Ordinance.

No significant change in real property transactions or corporate activity during 1982 was noted.

## *Legal Services Board*

The legal services board is responsible for the provision of legal aid to eligible persons. Legal aid was provided in 2,311 cases during 1981-82.

The legal services board acts as the carrier agency for Maliiganik Tukisiiniakvik (the legal aid clinic in the Baffin region) and the Native Courtworkers program (based in the western part of the Territories). These groups have become regional committees of the board, with a view to taking over some functions performed by board staff.

During 1981, the courtworker program in the Mackenzie Valley communities was supplemented with the addition of a courtworker in Cambridge Bay. A representative of the central arctic joined the Native Courtworker's Board of Directors.

In February 1982, Maliiganik Tukisiiniakvik obtained the services of a lawyer situated in Frobisher Bay to assist them in handling cases and providing public legal education in the Baffin.

Both the Native Courtworkers and Maliiganik Tukisiiniakvik assist individuals by taking applications for legal aid, interviewing persons with legal problems prior to the arrival of court circuits, and ensuring that they speak to a lawyer, when necessary.

## *Safety Division*

The safety division has responsibility for mechanical, electrical, fire, and occupational health and safety standards. This division also administers labour standards.

### *Mechanical and Electrical*

This section administers the Electrical Protection Ordinance, the Boilers and Pressure Vessels Ordinance and the Gas Protection Ordinance. Electrical inspectors were located in Frobisher Bay and Hay River, as well as Yellowknife.

Two boiler inspectors work out of Yellowknife, one under federal contract. The inspectors carried out inspections in every large settlement and most of the smaller ones.

Problem areas were identified and priorities set for the new Gas Protection Ordinance.

### *Fire Safety*

Fire losses in the NWT were higher than the previous year. Although the number of fires remained the same, there were 12 fatalities and the property dollar loss almost doubled.

The Fire Safety Section carried out investigations within the NWT involving deaths, large loss fires and fires involving arson or suspected fraud. The Section provided to volunteer fire fighters, as well as fire safety awareness education for school students and the general public.

### *Occupational Health and Safety*

Planning progressed on a northern communications project involving the Canadian Centre for Occupational Health and Safety. The project will provide occupational safety information to northern residents in their own language and at their workplace.

Drafting of occupational health amendments to safety regulations continued. Active regional worksite health and safety committees were initiated and accident investigation reporting and response mechanisms for all serious and fatal accidents was maintained.

A formaldehyde foam insulation testing and formaldehyde gas monitoring program was carried out. Chemical inventory and health and safety data sheets were maintained.

### *Labour Standards*

The Labour Standards Section administers both the Labour Standards and Fair Practices Ordinances, receiving and investigating complaints filed under the legislation.

The Labour Standards Board holds hearings and make decisions involving disputed wage claims, and hears appeals from decisions of the labour standards officer.

The minimum wage rates were increased to \$4.25 per hour for persons 17 years of age or older and to \$3.75 per hour for persons under 17 years of age. A regulation guaranteeing employees periodic meal breaks came into effect.

The Fair Practices Ordinance, was amended to prohibit discrimination on the grounds of handicap, age, family, or a conviction for which a pardon has been granted, in addition to those grounds previously contained in the ordinance.

### *Mining Inspection Services*

The mining inspection division implements all provisions of the NWT Safety Ordinance and Mine Safety rules through regular inspections of the mining properties. The division provides a full range of services, including an environmental monitoring program and mine rescue services.

Major amendments to the Mining Safety Ordinance were drafted with a view to improving occupational health and safety standards.

The mining inspection division compiles and maintains complete mining production statistics.

### *Consumer Services*

#### *Consumer Affairs*

The consumer affairs office investigate consumer complaints and mediates disputes between landlord and tenant. And has responsibility for the licensing of vendors, direct sellers and collection agents.

Licensed Lotteries operated by religious and charitable organizations generated proceeds of approximately \$1,000,000. for sports, recreation and cultural groups, education and radio societies, and religious organizations.

### *Insurance, Professional and Business Licensing*

The number of companies licensed to transact insurance business increased from 136 in 1981 to 145 in 1982. Licences were issued to 104 agents, adjusters, brokers and salesmen.

382 licences were issued to professionals, including doctors, dentists, pharmacists, optometrists, veterinarians and dental therapists practising in the NWT.

During the 1982 licence year, 709 business licences were issued to individuals and companies operating in unincorporated areas, an increase of 11 per cent over the previous year.

The vital statistics registry issued 3,821 certificates of all types in 1982; 1,078 births, 230 marriages and 185 deaths were registered; and 102 adoptions and 35 change of name processed.

### *Library Services*

Close co-operation between NWT Library Services and the Province of Alberta continued, with an agreement relating to participation in their interlibrary loan circuit and a zenith reference service being extended.

Statistics for the fiscal year ending March 31st, 1982 showed that there were over 100,000 items in the library system in addition to the unrecorded holdings of member libraries. The membership in the library system is approximately 30 per cent of the total population of the NWT, 5 per cent higher than the national average.

### **Prince Of Wales Northern Heritage Centre**

From January 1982 through September 1982, a total of 22,045 people visited the Prince of Wales Northern Heritage Centre.

The passing of an Archives Ordinance by the Legislative Assembly established the Territorial Archives in the Centre. As part of its policy to make the archives more accessible, the first of a series of "Sources for Northwest Territories History" was issued listing all the surviving records of the old Territorial Council.

The centre was involved in the presentation of 16 temporary and travelling exhibits developed from its collections, on loan from other institutions or produced in co-operation with community groups. Highlights included an exhibition of drawings by William Noah, a photographic exhibition entitled "Canada's Northland" from the National Film Board, and an aviation exhibit developed in conjunction with Carbiou Carnival.

Major projects included the preservation and exhibition of a moose skin boat and the preparation of a mounted polar bear for the front lobby.

Four travelling exhibits were produced in 1982 for circulation throughout the Northwest Territories - The Archaeology of the NWT, Polar Bears, Dene and Metis Portraits, and The Setting: Earth History of the NWT.

Over 6,000 artifacts, specimens and works of art became part of the permanent collections in 1982. Over 3,000 artifacts were recovered as a result of the new Territorial archaeological program and close to 2,000 artifacts associated with the early exploration of the North were returned from Parks Canada.

Through the museums advisory service, a broad range of support services and financial assistance was made available to community museums, historical societies and heritage groups in the Northwest Territories.

A more active role in archaeology and the broader field of historical resource management was instituted in 1982 with the establishment of an archaeology program.

During the summer, 12 field projects related to heritage conservation and education were undertaken by staff archaeologists. In co-operation with the Northern Heritage Society, an archaeological field school was held on Somerset Island, involving students from across the Northwest Territories in a study of prehistoric Inuit sites.

The archaeology program began an assessment and inventory of historic cabins and related sites along the Mackenzie River in the Fort Good Hope region.

### **The Courts**

The courts of the Northwest Territories are organized and administered on a pattern very similar to that of the courts elsewhere in Canada.

### **The Court of Appeal**

The Chief Justice and Justices of Appeal of the Alberta Court of Appeal and designated Justices of Appeal of the Saskatchewan Court of Appeal, together with the Judges of the Supreme Courts of the Appeal, together with the Judges of the Supreme Courts of the Northwest Territories and the Yukon Territory, are the members of the Court of Appeal of the Northwest Territories. The court sits once a year at Yellowknife and at other times throughout the year, as required, at Edmonton and Calgary.

### **The Supreme Court**

Since 1955, when the Supreme Court was created under the Northwest Territories Act, a single judge has presided over the court, although in recent years the statutes were amended to provide for a second resident judge. Other judges of equivalent courts in other parts of Canada may be called upon to sit as deputy judges of the Supreme Court in the Northwest Territories.

The Supreme Court sits, both with and without a jury, to hear civil and criminal cases at points throughout the Northwest Territories on a year-round basis. It also hears appeals in certain cases from the Territorial Court, the Juvenile Court and Justices of the Peace. It has powers of review over their decisions and those of coroners and certain statutory bodies within the Northwest Territories.

### **The Territorial Court**

The Chief Territorial Judge and three other Territorial judges are all permanent residents of the Northwest Territories. One Territorial judge is located at Hay River. The court sits at points throughout the Northwest Territories, as required. Its judges are also Judges of the Juvenile Court and magistrates under the Criminal Code. They conduct most of the criminal trials in the Northwest Territories and dispose of civil claims involving less than \$5,000.

### **The Juvenile Court**

Eight juvenile court judges, including the four Territorial judges, sit at various points in the Northwest Territories as required, under the Juvenile Delinquents Act.

### **The Coroners Courts**

Eighty-seven coroners hold inquests as required, throughout the Northwest Territories.

### ***The Justices of the Peace***

One hundred and four justices of the peace sit in their communities to hear matters under the Criminal Code and the ordinances of the Northwest Territories.

### ***Administration and Mandate***

Judges of the Court of Appeal and Supreme Court are appointed by the Governor General of Canada under the Royal Prerogative and in accordance with the Judges Act of Canada. Administrative requirements are met by the Commissioner of Federal Judicial Affairs under the Judges Act, with overall supervision by the Canadian Judicial Council.

The Territorial judges, juvenile court judges, coroners and justices of the peace are appointed by the Commissioner of the Northwest Territories under applicable ordinances. Administrative support to the Territorial judges and to the juvenile court, coroners courts and justices of the peace are met by court services of the Department of Justice and Public Services.

### ***Government Services***

#### ***Minister's Report***

The Department of Government Services provides support to other departments in areas such as purchase and management of supplies and materials, communications, records management, and traffic and computer-related services. The department also administers a program of petroleum products distribution to 40 communities and the federal home heating fuel assistance program.

In July 1982 the Honourable Tom Butters succeeded Mr. Kane Tolaganak as minister.

A cross-departmental northern preference policy based on the principles that Northerners should receive every opportunity to benefit from dollars spent in the North was developed.

The policy states that the government may provide a preference to Northern contractors in order to promote the use of Northern labour and materials purchased in the North to encourage the development and competitiveness of Northern business. The policy applies, with some specific exceptions, to all contracts entered into by departments and territorial agencies for supply of goods contracts, construction contracts, service contracts and leases.

The total value of such contracts is about \$50 million annually. In recent years about 15% of this total has been attributable to contracts with Northern businesses.

The northern preference policy was revised effective October 25, 1982, to further promote Northern business. Changes included a clear definition of a Northern business, and extension of the previous policy to include preference for sub-contractors and businesses on the Mackenzie Highway System. Under the new policy a registry of Northern contractors is maintained. The revised policy continues to invite tenders for contracts under \$5,000 from Northern businesses on a first-priority basis.

Another significant policy thrust of the department is a transportation assistance program to be implemented in 1983/84, aimed at lowering the cost of living in the least accessible communities.

As part of the government's participation in the federal 'six and five' wage and price restraint program, Mr. Butters announced that price increases for fuel supplied by the petroleum products division would be held to 6% for the year beginning October 1, 1982.

Northern transportation issues were a concern of the minister. Significant departmental resources were dedicated towards the northern transportation conference held in Whitehorse in October. The conference, titled "The Challenge of the Eighties", was sponsored by the Canadian Transportation Research Forum and the Federal and Territorial governments.

A modern computer centre will be established within a new office complex. This building should be ready for occupancy for December 1983.

During the year, an administrative reorganization resulted in the transfer of the motor vehicles registry and the liquor control system to the Department of Government Services.

### ***Systems and Computer Services***

The systems and computer services division is responsible for the delivery of computing resources, services and expertise to government departments and organizations. A systems support services section was established to ensure that operational information processing systems receive an adequate degree of maintenance and other support services. A significant achievement for the group in 1982 was the implementation of the government's budgetary accounting system.

The government's inventory of computing equipment was enhanced with the addition of a Hewlett-Packard 3000 Series 44 computer.

### ***Supply Services***

The purchasing section is responsible for the acquisition of all goods required for the government's operation and program delivery.

During 1982, a complete review of procurement systems was completed with new and revised systems implemented.

New procedures for contracting aircraft charter services were developed and implemented. The distribution section began the drafting of directives and user manuals on warehousing and traffic.

### **Office Services and Administration**

Office services and administration functions were integrated in 1982. The responsibilities of this division now include; communications and mail services, records management, and the authority for the acquisition of office furnishings and equipment, which includes word processing and photocopying equipment.

During 1982, direct mail service was established between Yellowknife, Frobisher Bay and Rankin Inlet. New telex equipment was scheduled to be operational in Rankin Inlet by the end of 1982, providing direct access to the telex network through the CNCP exchange in Toronto.

Training programs for word processing facilities were developed for operators and managers.

### **Motor Vehicles**

A motor vehicle driver examination centre was established in Hay River.

### **Petroleum Products**

The petroleum products division distributes petroleum products, including home heating fuel, to 40 remote communities in the Northwest Territories.

In 1982, tank farms were completed at Lac La Martre, Gjoa Haven, Fort Franklin, Paulatuk, Coppermine and Chesterfield Inlet.

Aviation refueling facilities were under construction for the communities of Sachs Harbour, Coppermine and Holman Island. Training programs were delivered at the community level to assist petroleum products operations.

### **Liquor Control System**

The liquor control system is responsible for the purchase, distribution and sale of alcoholic beverages to the residents and censuses of the Northwest Territories, through three government stores, six agencies and two warehouses.

The operation of the liquor control system within the Northwest Territories is complex. The vast distances and transportation availability make necessary both retail and back-up inventories at all locations.

### **Finance**

#### **Minister's Report**

Since becoming the NWT's first Minister of Finance in 1981, Tom Butters has promoted responsible government by developing financial practices and relationships with the federal government similar to those practised by provincial administrations. He has encouraged greater involvement of elected officials in financial administration and the use of budgetary and taxation policy to affect social and economic conditions. Government to government financial relationships have developed with the federal government. More efficient and responsive administrative practices are followed in accordance with accepted accounting standards.

In 1982 Mr. Butters sponsored a new Financial Administration Ordinance, which was approved by the Legislative Assembly at the May session and proclaimed in September. The new ordinance gives official recognition of the Financial Management Board as a financial policy advisor to the Commissioner. Responsibility for ensuring that government expenditures are valid charges and are properly processed was decentralized from the Department of Finance to department heads. This changed the role of the Department of Finance to that of providing overall financial policy and control. The ordinance also recognized the principle of accrual accounting to ensure that carry-over of old year accounts to a new year are minimized.

Government of the Northwest Territories' support of the restraint program includes limiting compensation increases in the public sector during fiscal years 1983/84 and 1984/85 to six and five percent respectively. There is also restraint in medical fee schedules and legal aid tariffs. There will be an increase of only 5% in the funding pool for unconditional grants to tax-based municipalities. Criteria for the distribution of these grants will allow for no more than 6% increase in salaries of municipal employees.

Similarly, there will be restraint on government administered prices. Prices of government distributed fuel will be held to a 6% increase for the year beginning October 1, 1982. There will be no tax rate increases in taxation areas.

In July 1982, Mr. Butters secured Executive Committee approval of an overall strategy for financial policy and direction in the government. This framework will help ensure that policy initiatives are taken and issues resolved in a consistent manner which recognizes the long-term and short-term goals of the government for more financial independence and responsible government.

Tax relief for Northerners to help compensate for the high cost of living continued to be a priority for the minister.

On October 27, 1982, the federal government announced the continuation of the moratorium on the taxation of Northern benefits for one additional year ending December 31, 1983. Because of the severe impact of the current economic recession on Northern communities and because employees and employees had been asked to adhere to the '6 and 5' program. Beginning in taxation year 1984 a modified tax regime for benefits will be phased in gradually over a four year period.

The minister also took an active interest in improving the tax position of hunters and trappers in the North by making representation to the federal Minister of National Revenue for consideration of the special 'hidden' costs associated with hunting and trapping as tax deductible expenses.

Mr. Butters appeared before the House of Common's Standing Committee on Indian Affairs and Northern Development to explain the government's financial requirements for the 1983/84 fiscal year and to apprise the committee members of long-term program requirements and financial concerns of the government. This was the second consecutive year that the Minister of Finance was invited to appear before the committee in conjunction with the review of the budget of the Government of the Northwest Territories.

The minister has executive responsibility for the Department of Finance.

There are three major divisions of the department: treasury, comptrollership, and administration.

### **Treasury**

The treasury division is responsible for the collection, management, control and reporting of all revenues for the government; fiscal and economic planning, including development of tax policies, borrowings, investments and cash management; and control of government assets, insurance and risk management.

The new financial information system enabled the treasury division to improve cash and investment management, the handling of supplier accounts and the invoicing of receivables.

### **Comptrollership**

The comptrollership division is responsible for the preparation of financial management information, including the Territorial accounts; for developing, co-ordinating and implementing financial policies and procedures.

During 1982, this division concentrated on completing implementation of the new financial information system, providing training for the new system and establishing effective financial controls.

### **Administration**

The administration division is responsible for the overall direction and co-ordination of the Finance Department. The division provides advice and guidance on financial matters, provides administrative support to the Financial Management Secretariat as well as departmental services relating to personnel administration and financial control.

### **Financial Management Secretariat**

The Financial Management Secretariat provides advice and support services to the Financial Management Board, a sub-committee of the Executive Committee. The Financial Management Board is chaired by Commissioner John Parker. The Honourable Tom Butters is the deputy chairman and the minister responsible to the Legislative Assembly for financial matters.

The secretariat is responsible for the planning, co-ordination, analysis and consolidation of the operating budget for the Government of the Northwest Territories.

In 1982, the secretariat began the development and implementation of a comprehensive policy and financial planning and expenditure system for the government. This system, when fully operational, will co-ordinate the priority-setting and financial decision-making processes of the government.

### **Audit Bureau**

The Territorial Auditor's reporting was expanded to include weekly meetings with the Minister of Finance. A working liaison was also established with the Deputy Comptroller General of Canada who serves as chairman of the inter-departmental committee on audit.

The Audit Bureau expanded the internal audit within departments not previously audited. A new comprehensive audit methodology was applied for the first time in Yellowknife and in the regions.

Following a request from members of the Legislative Assembly, and after discussions with the Auditor General of Canada, an Audit Ordinance was drafted, designed to establish the role of Territorial Auditor in respect of cost sharing agreements with various federal departments, and to enhance the role of both the Auditor General and Territorial Auditor in the performance of 'value for money' audits.

The audit committee had its first official presentation by the Auditor General's staff. The committee updated the system for actioning replies to audit comments to involve the responsible minister in this important process to improve management accountability.

The bureau provided comprehensive audit training for all audit staff. Public firms, Northern Canada Power Commission and Yukon auditors were also given the opportunity to participate in the training.

### **Personnel**

The Department of Personnel is responsible for the planning and co-ordination of personnel management within the public service of the Government of the NWT. The Department of Personnel reports to the Commissioner and the Honourable Tom Butters reports to the Legislative Assembly on the department.

### **Personnel Services**

Of the 888 positions staffed in 1982, a total of 768 were hired from the North, while 120 were hired from outside the Territories. This compares to a total of 1,056 positions filled in 1981, of which 890 were Northern hires. In addition, 260 teaching positions were filled in 1982, of which 77 were transfers and 15 were promotions.

During 1982, 33% of positions staffed were filled by native Northerners while 86% of all positions staff were filled in the North. Total staff turnover was 24%, down considerably from the 32% turnover figure in 1981.

There were 1,264 positions classified in 1982. Of these 939 were re-evaluations of existing positions and 325 were evaluations of new job descriptions.

### **Staff Relations**

revised staff accommodation policy was implemented in 1982 in all communities in the Northwest Territories. A revision of the rental structure resulted in the charging of market rates of rent in the major centres located on highway systems. Increases were also processed for the flat rate charges for utilities to bring rents charged in smaller communities into line with the larger centres. A number of staff housing units were sold to employees in 1982 and a housing purchase (buy back) plan was developed to encourage employees to invest in their community of residence.

The Frobisher Bay General Hospital was turned over to the Government of the Northwest Territories in December 1982. Approximately 100 employees of the department of National Health and Welfare were offered positions with the Territorial Government, resulting in a smooth transition from the Federal to the Territorial Government.

Collective bargaining talks with the NWT Public Service Association resulted in an arbitral award of increases of 14½% effective April 1, 1981 and 12½% on April 1, 1982.

The Government of the Northwest Territories announced a wage control program in September 1982 which limited the salary increase of Territorial public servants over a two year period of controls. Public sector wages were limited to increases of 6% for the first year of controls and 5% for the second starting on April 1, 1983 for the NWT Public Service Association bargaining unit and September 1, 1983 for the NWT Teachers' Association.

### **Staff Development and Training**

The staff training section determines, through the performance appraisal process, employees' training needs both in headquarters and the regions.

Eighty five courses were held resulting in 2,200 employees receiving training.

Currently, 19 employees are attending university or college programs under Government sponsorship.

Long term residents are eligible to compete for training positions within various departments. These positions provide both on-the-job and academic training to develop technical and professional competence. Trainees completing the program are appointed to permanent positions.

The office of Native employment provides counselling services for Native employees of the government and also to Native Northerners seeking employment with the government. Presently about ¼ (or approximately 1,000) of the employees are Native Northerners. This represents an increase consistent with previous years of about 2%.

### **Systems and Administration**

The systems and administration division provided the department with financial, administrative and personnel information services.

A computerized personnel information system (P.I.N.G.O.) was implemented.

### **Economic Development and Tourism**

#### **Minister's Report**

On July 1, 1982 Arnold McCallum assumed responsibility for the portfolio of Economic Development and Tourism. Since then, a review of departmental policy and organizational structure was undertaken to ensure that the delivery of programs and services is carried out in an efficient and appropriate manner.

Constitutional advancement occurred in 1982, with the invitation to the NWT to participate in the federal/provincial mines ministers conference.

The minister endorsed an innovative policy for the future production of the Territorial Explorers' Guide, the official tourist brochure for the NWT.

Emphasis is being placed on development both social and economic which is consistent with approved government policy and priorities, taking account of social and economic impacts of development on NWT residents.

Increased emphasis will also be placed on responding to the needs of small businesses; ensuring the ongoing development of a skilled, indigenous labour force, and promoting tourism as a viable industry in the NWT.

### **Planning and Resource Development**

The Planning and Resource Development Division undertakes economic planning and policy development initiatives and represents the department in dealings with other departments and agencies.

The Secretariat continued developing a data base of housing and food costs, current and potential resource revenues and general economic indicators. Policies and programs developed included: a transport subsidy program; assistance to industry policy and program; manpower and business development policies; and tourism strategies and policy.

The general development agreement section administers the Canada/NWT interim subsidiary agreement, a program designed largely to provide for community economic development. Over the 1981/82 fiscal period, nearly \$980,000 was expended, approximately one third each spent under tourism, renewable resources and community-based planning. About \$160,000 was spent in fiscal 1982/83, most going towards tourism-based projects.

The minister and petroleum resources section worked to enhance benefits to the local labour force and business community from non-renewable resource activities. A major conference on Northern participation in oil and gas development was co-ordinated.

Economic reviews of Dome Petroleum's Beaufort Sea operations and Cominco's Polaris project were also completed. In addition to developing and monitoring its own agreements, the section is responsible for reviewing agreements between the Canada Oil and Gas Lands Administration and major oil companies, to ensure northern benefits are addressed.

During 1982 nine mines employing 2,500 people operated in the Northwest Territories.

### **Tourism and Parks**

Since the reorganization of the tourism and parks division in 1981, emphasis has been placed on the development of community-based tourism and the provision of assistance to tourism zone associations in the Kitikmeot, Kerewatin, Fort Smith and Inuvik regions. A five-year tourism plan has been finalized.

During 1982, the main emphasis on marketing was confined primarily to Canada. European activities were handled through co-operative efforts with the governments of Alberta, British Columbia and Yukon.

During 1983, the main marketing thrust will once again be directed to the Canadian market through sport shows in Vancouver, Edmonton, Calgary and Toronto. In addition, participation in a major sport show in the Pacific/West area of the US will heighten US interest in the NWT Highway System.

The Territorial parks program was involved in several major projects, ranging in scope from park construction to the initiation of several Territorial historic sites in the Keewatin and Baffin regions. Several potential new park areas have been identified including the Canol Heritage Trail Park, Hidden Lake Territorial Park and Prince Leopold Island Territorial Park. The territorial and federal governments have agreed, in principle, to establish a National Park Reserve on Northern Ellesmere Island.

### **Commerce**

The commerce division incorporates all departmental activity related to business services and development in order to promote the growth and development of new and existing businesses, especially in the renewable resources, secondary and tertiary sectors.

The financial services section is responsible for administering the Northwest Territories Eskimo Loan Fund, the Business Loans and Guarantees Fund, as well as the Canada/NWT Special ARDA program.

The Canada/NWT Special ARDA program has been extended for a further two years to provide assistance to people of native descent in business. Over the past year, 80 grants totalling \$2.7 million were approved. Five loans were approved under the Eskimo Loan Fund in 1982, while 32 loans were made under the Business Loans and Guarantees Fund. Amendments made in 1982 to the Small Business Loans and Guarantees Ordinance permit loans of up to \$500,000 to all northern businesses.

With financial support from the federal and territorial governments, Canadian Arctic Co-operative Federation Ltd. continued to assist local co-operative through operational support and business services. Sales in 1982 for the 37 reporting co-operatives showed little change from the previous year and totalled nearly \$20.5 million. Approval was given to finalize the amalgamation of Canadian Arctic Producers Co-operative, Canadian Arctic Co-operative Federation Ltd. and Arctic Co-operatives Ltd. The continuing co-operative will be known as Arctic Co-operatives Ltd.

In keeping with departmental objectives, three commercial enterprises were privatized in 1982 – the Inuvik sewing centre, the Gjoa Haven craft shop and the Bay Chimo store.

Small business services provided by the department were expanded over the past year in the areas of promotion, marketing, financial management and technical and financial assistance. "Services to Businesses", one of several publications developed to improve private sector awareness of the department's programs and achievements, received a first prize at the annual Industrial Developers Association of Canada meeting during 1982.

The arts and crafts section disseminated artists' biographical information; assisted southern galleries in exhibiting northern works, and provided technical advice to arts and crafts enterprises in the Territories. Funds were provided to the NWT Arts and Crafts Council and the Native Women's Association for training workshops and to finance inventories.

### **Manpower Development**

The manpower development division provides a focal point of employment, apprenticeship, industrial training and related support programs for Northerners in business and industry.

Over the past year, services were provided for training and job creation under the training on-the-job and short term employment programs. The computerized Territorial employment record and information system continued to provide Northerners access to the NWT labour market and is being revised to better serve manpower planners and the labour force. Working with the mining and petroleum industry the section identified training and job opportunities. A project team was established at Norman Wells to maximize contact and employment for Northerners with the expansion project.

The apprenticeship program continued to develop skilled tradesmen for northern industry through a combination of on-the-job and in-school training. As of August 1982, there were 614 trainees in 37 apprenticeable trades across the Northwest Territories.

### **Hire North Project**

The Hire North Project is a special program administered by the department to provide on-the-job training for northern residents in the operation of heavy equipment and the mechanical trades, related to highway construction and maintenance.

The Liard Highway (NWT No. 7) from the Muskeg River south to the NWT/BC border and the 5 km Fort Liard access road, was essentially completed.

During the five operating seasons, (1978-1982) the project provided 484,475 hours of employment and 131,789 hours of training. Approximately 70 percent of regular employees and 100 percent of trainees were northern residents.

## Public Works

The Department of Public Works is responsible for designing, building, operating and maintaining the buildings and works required by the Government of the NWT. This includes the operation of ferries, vehicles, heavy construction equipment and the maintenance and reconstruction of roads and highways.

The total operations and maintenance budget for the department's activities in 1982 was approximately \$74,000,000. As well, the value of capital works designed and built by the department was about \$55,000,000.

On November 1, 1982, responsibility for energy conservation, which had been within the Department of Government Services, was transferred to Public Works. Improving the energy efficiency of buildings and works continues to be a priority.

In 1982, the department made several organizational changes which include the establishment of two assistant deputy minister positions; the creation of a new division entitled Policy, Planning and Training, and the strengthening of financial planning and administration in the department through the establishment of a Finance Division. The department began planning for increased decentralization of program and service delivery to the regional offices, increased local business development through training and other approaches, and prepared for the possible transfer from the federal government of responsibility for all aspects of highway reconstruction, new construction and maintenance, as well as health services programs.

The contracts and capital planning division was heavily involved in the development of the government's Northern contracting preference policy which was implemented in 1982.

Community involvement in the design and construction of community buildings with direct involvement of a local labour force is emphasized. Projects aimed to encourage the participation and training of local labour get underway in Cape Dorset, Fort Resolution and Clyde River.

## Operations

The Buildings and Works Section has responsibility for operating and maintaining government buildings, services and works efficiently and economically, including payment of all utilities.

Costs of roof replacement on schools exceeded \$3,000,000. Major work was done on district heating systems in Inuvik and Frobisher Bay. The steam line to the Federal Building at Frobisher Bay was eliminated and replaced with efficient boilers to produce a large saving in heating costs. A new school at Lac La Martre reduced heating cost by using residual heat from the NCPC plant, including the first recovery from the diesel exhaust. In co-operation with NCPC, a general agreement was finalized in 1982 to encourage use of residual heat.

Energy conservation received specific attention. An energy efficient demonstration house at Frobisher Bay showed a reduced fuel consumption of 70%. A new low-energy requirement school at Rankin Inlet is being evaluated. Upgrading of building insulation, use of triple glazed windows, overhead fans on high ceilings, improving efficiency of both indoor and outdoor lighting, and elimination of electric hot water heaters were included in the program of every region. The value of energy conserved during 1982 exceeded \$3,000,000.

The replacement of worn and obsolete vehicles and equipment continued with the delivery of 130 new units. Energy conservation was also a major objective in this area, achieved by the purchase of fuel efficient, downsized vehicles and the conversion of eight vehicles in Yellowknife to run on propane fuel. These conversions are now producing operating cost savings of nearly 50%.

## Architecture

A new school was erected in Lac La Martre, and construction was started on a new school in Norman Wells. A major addition to the school in Clyde River was completed. A hotel at Clyde River is being built. The project will serve to train a local construction force, which will be utilized in the alter building of a new school.

Construction of community facilities increased under a recent program to build community offices, social halls and recreation centres. Construction was completed on a community services building for Pelly Bay. New community halls are under construction at Cape Dorset and Fort Resolution, employing a local labour force as the principal builders. Community office buildings are under construction in Fort McPherson and Arctic Red River and garage buildings were constructed at Lac La Martre, Spence Bay and Pelly Bay.

## Engineering

The total of all construction operations handled by the engineering division in 1982 was in excess of \$10,000,000.

Installation of new water supply facilities was carried out during the year in Fort McPherson, Fort Rae, Rankin Inlet and Tuktoyaktuk. Except for Tuktoyaktuk to be completed in 1984, the projects were completed and are in service.

At Tuktoyaktuk and Rankin Inlet new facilities for sewage handling were made available. The water plant at Fort Simpson incapacitated by fire last spring was completely rebuilt.

Land assembly was carried out in Baker Lake, Igloodik, Norman Wells, Rankin Inlet, Cambridge Bay and Frobisher Bay, to provide a total of 140 building lots.

New tank farms are being built in Paulatuk and Lac La Martre and additions are being made to the present installations in Coppermine and Gjoa Haven. Ongoing construction operations in five Baffin Island communities, three Keewatin communities, Holman Island and Fort Franklin were completed.

### Highways

Preparations continued for the expected transfer of the road reconstruction program from the federal government on April 1, 1983, representing a step towards assuming full responsibility for the highways program. The transfer of new construction is expected to be made in 1984.

### Energy Conservation

The energy conservation division directed the majority of its funds and time to the joint Federal/Territorial energy conservation and renewable energy demonstration program.

During the two years the program has been in place, 64 formal proposals have been processed and 14 received funding assistance.

A wood gasification power plant in Fort Providence that was commissioned in March, is considered one of the most advanced installations of its kind in North America.

### Renewable Resources

#### Minister's Report

During 1982, Minister of Renewable Resources Richard Nerysoo placed emphasis on explaining the department's programs to hunters and trappers, and approved a new set of goals and objectives for the department.

To emphasize service to hunters and trappers, the minister created a field services division containing resource development, conservation education and enforcement offices, strengthened the department's information and education programs by reallocating manpower and budgets and created new conservation education positions in the regions.

The Minister renewed efforts to ensure that the harvest of wildlife resources remains a lifestyle and economic option for future generations of Northwest Territories residents.

### Field Services

The field services division was created to provide advice and support to the entire department. Public information and education were emphasized. Four new regional conservation education officer positions were established and the conservation education section was given a substantial increase in budget.

Thirty-five reports available to the general public on wildlife studies were produced in 1982.

Seventy applications for funding under the outpost camp program were approved for assistance to approximately 1,300 persons who wished to maintain living on the land.

During the 1981/82 fur season 3,615 trappers were recorded selling fur for \$3,737,928. For comparison purposes, in 1980/81, 4,336 trappers sold fur valued at \$5,029,151.

Thirteen outfitter licences were approved for issuance to northern businesses.

### Wildlife Service

The wildlife service concentrated on management of wildlife to ensure its continued availability to all northerners, particularly those who depend on wildlife for maintenance of their lifestyle.

Advances are being made in resource harvesting studies through the cooperation of regional native organizations and sports hunters.

Cooperative studies with federal agencies continued on the effects of industrial disturbance on barren-ground caribou.

Considerable advances were made in the techniques used for surveying caribou, muskox and polar bear. The polar bear tagging program continued with added experimental work using satellite radio-collars.

Birds of prey studies in cooperation with industry, native organizations and other government agencies, were carried out.

Assessment of harvest levels and regulations is an on-going activity in response to new information and to requests by users. Regulations concerning the capture of gyrfalcons for commercial sale were modified to better manage the harvest of this valuable species.

A forest fire management policy was drafted to reflect the requirements of trappers and the protection of wildlife resources. Bear detection and deterrent research was initiated to study ways to protect industry, and control the increasing kill of nuisance bears.

Plans for employment and training of northern residents as assistant wildlife officers were initiated. A secondary focus was on upgrading skills of wildlife officers in areas such as enforcement and administration.

### Environmental Services

The primary responsibility of protecting the environment of the Northwest Territories by controlling pollution is accomplished through a prevention, monitoring and enforcement program.

During the year, the division was involved in the clean-up of oil spills, clean-up and disposal of hazardous materials, as well as providing advice and assistance to industry, municipalities and the public.

The division administered the Pesticide Ordinance and Scientists Ordinance and licenced most research projects carried out in the Northwest Territories. Efforts were made to ensure that proper community consultation occurred and reports were submitted.

An improved environmental emergency reporting system and corresponding data base was completed in 1982. A review of the Environmental Protection Ordinance was undertaken with a view to its revision. The increased use of hazardous materials has resulted in a requirement for additional storage space.

### **Environmental Planning and Assessment**

The environmental planning and assessment division was created in the fall of 1981 and has operated at full staff since April 1982. Non-renewable resource exploration and development provided the impetus and need to develop an integrated approach to planning and assessment of impacts on renewable resources.

The division serves as the coordinator of the Territorial Government's technical contribution to land use planning.

A study of the major water management issues facing the government was launched. Two large-scale hydro-electric projects proposed; one on the Liard River in British Columbia and the other on the Slave River in Alberta are being assessed for potential environmental damage and presentations are being prepared for the regulatory project approval process.

The division reviewed mining projects in the Mackenzie Mountains and on the Melville Peninsula and advised the interjurisdictional regional environmental review committee about wildlife and watershed concerns. Staff also worked with the federal government on preparation of agreements to protect lands to be crossed by the Norman Wells Pipeline, and on gathering basic wildlife information in areas of potential mineral development in the Mackenzie Mountains.

The division sponsored a workshop on potential effects of the Beaufort Sea hydro-carbon development proposals, and coordinated the department's National Energy Board intervention on the Arctic Pilot Project.

### **Energy and Resource Development**

Richard Nerysoo, Minister for Energy and Resource Development, established a major goal of ensuring that NWT residents receive maximum benefits from resource development in the North and is identifying methods to secure a greater role for the Territorial Government in controlling the pace of resource developments.

The Energy and Resource Development Secretariat was formed in October, 1981 reflecting the government's determination to exercise greater responsibility and to ensure its participation in resource development decisions. The Secretariat provides the Executive Committee and the Minister for Energy and Resource Development with a pool of advisors to aid in meeting the energy and resource development priorities of the GNWT. The secretariat now fully staffed, includes advisors in the areas of energy, resource economy, socio-economics, regional planning and mineral development.

A resource development policy, presented by the Minister to the Executive Committee for ratification, makes provision for the designation and prioritization of specific areas known as Development Impact Zones. The formation of a DIZ within the area of impact would be representative of the public interests within the zone. An assessment and review process would provide a report that determines public response and identifies the effects of a project and would include a recommendation for the terms and conditions of project support.

The Penner Report, the result of hearings by the Sub-Committee on the Northern Canada Power Commission, including recommendations which followed closely those of the Executive Committee presented by Mr. Nerysoo.

The Secretariat acted as a coordinator of the Territorial Government's Beaufort Sea environmental assessment review process and of activities of the Beaufort Sea office. It was also assigned to act as coordinator for the assessment of the proposed Slave River Hydro Project, working under the ministerial direction of Richard Nerysoo and of Arnold McCallum, Minister of Economic Development and Tourism.

Another goal of the Minister for Energy and Resource Development is to ensure NWT residents will be provided with a secure and reasonably priced energy supply in the near future.

Ministerial authority for the Public Utilities Board was transferred to Mr. Nerysoo. He will be reviewing, through the Energy and Resource Development Secretariat, the manner in which the responsibility of the board can be expanded.

### **Resources**

#### **Mineral Exploration**

Mineral exploration, both number of projects and expenditures, declined significantly in 1982 compared to the record highs of 1979, 1980 and 1981.

Weak metal markets and low prices reduced cash flow and hence exploration funds available to mining companies.

The first sign of this decline came with the reduction in prospecting permit applications in January. Industry applications dropped significantly. This was somewhat offset by government applications over Petro Canada's coal leases in the high Arctic.

Eighty-one prospecting permits were issued at the end of January 1982, compared to 73 in 1981. Sixty-two of these were to companies at least indirectly controlled by the Canadian Government. As well, 130 prospecting permits lapsed or were relinquished during 1982, compared to 54 in 1981.

Uranium exploration declined, base metal exploration dropped and precious metal, mainly gold exploration, probably declined also, as gold prices were weaker during the first half of 1982. Fluctuations in market conditions appeared to have the strongest effects on exploration levels.

New mines in 1981 and 1982 included Cullaton Lake and Lupin, small and medium sized gold producers respectively, and Polaris a medium sized base metal (lead-zinc) producer. The Cadillac Mines plant was completed but weak silver prices prevented its operation.

A minor staking rush in the Nahanni area in late August followed release of a Geological Survey of Canada geochemistry open file.

There was extensive coal exploration in the Arctic Islands by Petro Canada, which through a subsidiary also explored much of the same area for metallic minerals.

### **Land Resources**

The granting of land use permits, leases and licences to industries and the public is an important component of the land management function. The land use permits, leases and licences specify conditions under which the land may be used.

A lands section assesses initial environmental implications of all land related projects and provides input to the environmental assessment and review process (EARP).

Activity in the Beaufort Sea remained at a level comparable with 1981, although there was a drop in mineral exploration during the 1982 season. Leases and licences continues to be issued for offshore activity.

Land use permits for 1982 are expected to be approximately 75, down from 210 for 1981. The number of land leases expected to be issued for 1982 is approximately 90, down from 127 for 1981.

### **Forest Resources**

The forest resources division is responsible for the development of programs, procedures and guidelines for the protection and management of northern forest resources, including cutting and removal of timber on Territorial lands.

The emphasis in forest resources during 1982 was on completion of The Liard River timber inventory report was completed, and plans were developed for continuation of timber resources inventories in the NWT.

### **Oil and Gas**

Oil and gas drilling activities increased significantly in 1982 over the past several years, due to the large number of shallow wells drilled at Norman Wells.

Major resource development companies, in addition to activities at Norman Wells carried out drilling operations on the mainland, in the Beaufort Sea and the Arctic Islands. Seismic surveys were conducted.

### **Water Resources**

The granting of water licences and authorizations to both industries and municipalities is an important component of the water management function. The licences and authorizations specify the quantity of water use allowed and the quality of wastewater to be discharged.

The controller of water rights of the NWT Water Board issued 99 authorizations for short term projects, requiring relatively small amounts of water.

Large scale projects requiring fresh water are regulated through the issuance of water licences by the NWT Water Board. The water licence specifies the quantity and quality of water and wastewater to be used and discharged. Eleven licences were issued by the NWT Water Board and 16 public hearings were held throughout the NWT.

The water resources division works in close cooperation with the water and sanitation division of the Government of the Northwest Territories, and on occasion, provides analytical support services for their water and sanitation program.

An Arctic waters section reviews the environmental implications and monitors all industrial activities in offshore and arctic waters north of the 60th parallel. Proposals from industry are reviewed through a system of community consultation and inter-governmental reviews. Input from the Government of the NWT is through the Arctic water advisory committee (AWAC).

### **Environmental Assessment**

The environmental assessment division is responsible for the implementation of the Environmental Assessment and Review Process. EARP requires federal departments and agencies to take environmental matters into account throughout the planning and implementation phases of projects, programs and activities.

The NWT regional office is responsible for the initial environmental evaluation of hydropower developments, water diversion schemes, mining developments and access roads, working with an advisory committee which has representation from the Department of Environment, Department of Fisheries and Oceans, Department of Indian Affairs and Northern Development and the Government of the Northwest Territories.

Public concerns and recommendations are considered during the decision making process. A public registry of all projects in the NWT which have been reviewed and which are being reviewed is available at the Northern Affairs regional office and appropriate district offices.

### **Forest Fire Management**

During the 1982 fire season, 350 wildfires were reported in the Northwest Territories. Of the 350 fires, 240 were fought; a total of 284,208 hectares were burned.

The 1982 fire season was much different than the previous two fire seasons. Fires were widely scattered throughout the Northwest Territories rather than being confined to relatively small areas.

A total of \$7,000,000 was spent during the fire season on fire suppression activities.

### **Education**

#### **Minister's Report**

During the past year, Minister of Education Dennis Patterson continued his involvement with review and reform of education in the Northwest Territories.

In March, the Legislative Assembly's Special Committee on Education presented their final report: "Learning Tradition and Change in the Northwest Territories". The report recommended ways to improve the education system in order to give people of the communities and regions in the Northwest Territories more control of education. It also recommended establishment of an expanded college system in the Northwest Territories, and suggested means of enhancing teacher orientation, recruitment and training, bilingual and special education.

In May, Mr. Patterson resigned from the committee so that he could concentrate on responding to its recommendations.

The minister appointed a task force on implementation to follow-up on the work of the committee.

New programs initiated include job-oriented training in the high schools. A comprehensive three year business education course is now being offered in all high schools, with three programs in health, social services and automotive mechanics being offered in Inuvik. In Frobisher Bay, high school students will also be able to take carpentry and general mechanics and in Yellowknife automotive.

Students completing these high school certificate programs will be prepared for basic employment or first year apprenticeship programs in those trades. The program will cost approximately \$3,000,000 over the three year phase-in.

Language development projects were funded in Fort Province, Fort Good Hope and Fort MacPherson and an indigenous languages development program was approved. Funding of \$3,000,000 for a three-year period was established.

The department was active on the Norman Wells joint needs assessment committee. In 1982 the NWT became a full member of the Canadian Education Association.

Communities were encouraged to develop an active role in education. A new agreement in 1982 with the Rae-Edzo School Society gave the society increased control over the operations of the community's school.

A new teacher certification program was implemented.

### **Programs and Evaluation**

In September, 1982, a new high school certificate program was introduced into schools in Frobisher Bay, Inuvik and Yellowknife. Courses leading to post-secondary training or directly into employment were offered in construction trade areas, business education and community service careers.

Major workshops were held in Frobisher Bay and Inuvik to lay the groundwork for further development of native language education in schools.

In other curriculum areas, priorities were placed on development of learning materials for science, social studies and English. A revised home economics program with teacher resource guides was completed. Work on student assessment in mathematics, and special exercises for remedial education culminated in several publications of assistance to teachers.

Progress was made in the development and acquisition of audio-visual learning materials.

### **Adult Vocational Training Programs**

With the establishment of Thebacha College in Fort Smith, a new dimension was created in the area of trades training and post-secondary education within the NWT. A board of Governors was appointed in February 1982 and has begun the process of developing the first fully accredited college of the NWT from the former Adult Vocational Training Centre.

Two-year diploma programs were expanded to include public and business administration and social service worker programs. The first students of these disciplines enrolled in September, 1982. Apprenticeship training in Fort Smith was expanded to include a program in industrial warehousing. Pre-employment training was expanded to include energy auditing and energy conservation. The heavy equipment operator program expanded its operation to include trainees for Esso Resources and Panarctic Oil.

TUK Tech a joint venture of Thebacha College, Dome Petroleum and Canada Employment and Immigration, was expanded in scope for the 82/83 drilling season. More than 60 students are in training.

The physical plan of the Fort Smith campus was upgraded as renovations to Breynt Hall were completed in October, 1982. A study was initiated by the Board of Governors to plan for the future development of the campus which will include recreational, residential instructional and support facilities.

### **Support Services**

The support services branch is responsible for the higher education program, finance, statistics, capital planning, personnel, teacher certification, and legislation and policy development.

The Department of Education's operating budget for the fiscal year 1982-83 was \$62,921,000. This O and M budget was broken down into six major activities.

Administration	\$ 8,099,000
Schools	45,579,000
Continuing Education	2,402,000
College Programs	5,961,000
Residences	3,880,000

The Department of Education also received \$15,727,000 in capital funds through the 1982-83 estimates.

### **Construction Program**

Maani Ulujuk Elementary Junior High School in Rankin Inlet was completed in the spring of 1982, as was the new William McDonald Junior High school in Yellowknife. Three classrooms on the second floor of the Gjoa Haven School were also completed. The new Lac La Martre School was completed in the fall. New schools for Norman Wells and Clyde River are under construction with completion expected early 1983 and late 1983 respectively.

Planning site investigation and design are currently underway for new schools in Fort Franklin, Sanikiluaq, Snowdrift and the Hay River Indian Reserve. The same is true for the proposed Keewatin Education Centre to be located in Rankin Inlet.

## Education Personnel

In 1982, education personnel included 625 teacher positions, 143 classroom assistants, 36 adult educators, 3 home management educators, 48 vocational education instructors. There were also 10 trainee positions and 10 graduates of the teacher education program.

## Legislation and Policy Development

However, in response to requests from local education authorities, an amendment to the Education Ordinance was enacted which will permit flexibility in setting the length of the school year.

Policy guidelines for local education authorities were further developed and three new community education societies were created at Pond Inlet, Cape Dorset and Ikluit (Frobisher Bay). Of the 60 education districts that now exist, two are operated by autonomous boards of education, 10 have semi-autonomous education societies and 45 have advisory education committees.

## Higher Education

A new Student Financial Assistance Ordinance in effect for school year 1982-83 features a number of types of sponsorship. These are basic grant, basic and supplementary grant, mature student grants, scholarship, priority occupations, and student loan.

As of the end of August 1982, 408 students were enrolled; an increase of 25% over the previous year. The new program of assistance is accessible to a wider variety of students.

At the July, 1982 meeting of the Student Grants and Bursaries Board sponsorship was awarded to 165 technical students and 243 higher education students.

## Information

The department is responsible for programs designed to inform residents of the Northwest Territories and other parts of Canada about the programs and services of the Government of the Northwest Territories. It provides native language services for the government, as well as central public affairs, audio visual, printing, graphic design and publishing services.

Formation of a language bureau and completion of a satellite communications program were major accomplishments of the Department of Information during 1982.

### Language Bureau

The language bureau reflects the government's desire to communicate in all native languages of the Northwest Territories and was established through a reorganization of the department's interpreter-translator corps, a section of the department that had served the needs of Inuit residents of the North since 1972.

The bureau will provide interpreting and translating services and audio-visual communications in five Dene languages in addition to the two main Inuit languages, and will undertake linguistic research, making use of micro computer data bases in networks to word bank, word process and publish native language word equivalent lists. Audio-visual materials will be used to communicate government information to Dene audiences where written forms of the languages have not been as highly developed or standardized as have those of Inuktitut.

Local communities will be provided with the necessary monitors and playback facilities to use the bureau's program packages.

A comprehensive and continuing training program for all language bureau staff was undertaken and is being developed in consultation with Dene Nation representatives and Inuit interpreters and linguists.

### Northern Communications Program

During 1982, four communities received satellite receiving and broadcasting equipment through the department's Northern Communications Program. Whale Cove, Paulatuk and Rae Lakes received regional radio and television service and Wrigley, television facilities.

This completed the major capital portion of the department's program, with 20 communities throughout the NWT being provided with radio and television service since the communications program began in 1978.

The department will continue to fund maintenance and servicing of the equipment.

All communities in the NWT between 150 and 500 population now have radio and television under the department's program and all communities over 500 population are directly serviced by the CBC. Some of the remaining eight communities under 150 population have requested that the Territorial Government extend its program to provide them with facilities.

The Department of Information has also actively encouraged the development of local radio stations as valuable communications vehicles at the community level. At 14 of the 20 communities where the department has installed equipment, local radio societies have taken steps to provide local programming in native languages. A Community Radio Grant Program assists local radio stations to meet operating costs.

## Public Affairs

During the year, departmental public affairs officers prepared about 300 press releases and 100 public service announcements for television, along with a variety of brochures, posters and pamphlets for client departments.

One of the major tasks of the audiovisual unit was to design and establish a video production system and a training program to teach newly-arrived Dene interpreter-communicators to use the medium to communicate in their own languages with residents of Dene communities.

## Publications and Production

A new publications catalogue was published in 1982, incorporating International Standard Book Numbers (ISBN) and International Standard Serial Numbers (ISSN) for all government publications.

The design section worked with government departments, agencies and regional offices to produce a variety of materials describing policies, programs and services.

Publications were produced on the priorities of the Government of the Northwest Territories and the resource development policy. A new government grants and loans booklet was published, to provide information on all types of assistance available to NWT residents.

## Social Services

### Minister's Report

As Minister of Social Services, Mr. Tologanak's concern for the needs of northerners resulted in a number of initiatives.

Procedures were implemented for devolution of social service programs to communities and an interdepartmental working group was developed to coordinate programs providing financial support to hunters and trappers. Child Abuse Reporting legislation was introduced. Several educational programs were held during Alcohol Awareness Week.

Social assistance rates were increased by 10%. The Senior Citizens Supplementary Benefit was also increased.

A review of the corrections officer training program showed that the program has been successful in providing a small number of well trained, capable native northerners to staff correctional centres.

Training and educational opportunities for locally hired staff resulted in several graduates from university and community college programs resuming their work as community social service workers.

Procedures relating to the devolution of the provision of social services to smaller communities were developed.

Planning for the impact of resource development on the delivery of social services was begun.

An office has opened in Norman Wells to serve the needs of the town and surrounding area impacted by the development of the Norman Wells-Zama Lake pipeline. Analysis of possible development in the Beaufort Sea indicates that considerable dollar and many-year resources will be required to deliver basic social service programs in the Mackenzie Delta area over the next several years.

### Alcohol and Drug Program

Alcohol and drug abuse continued to be a major problem throughout the NWT.

Of particular concern in the apparent increase of drug abuse among students. The alcohol and drug staff, working with the Department of Education, prepared information packages and kits for students, teachers and parents.

The two major treatment centres of the Northwest Territories, at Inuvik and Yellowknife, continued to offer a wide variety of alcohol abuse related programs.

The Alcohol and Drug Coordinating Council expressed concern about training for community alcohol projects. Department of Social Services alcohol and drug staff and National Native Alcohol and Drug Abuse Program staff formed a joint training division which during 1982 began the extensive training needed by community projects.

The problem that alcohol and drug abuse poses to the work place received increased attention during the past year through the Employee Assistance Program. The program provides training to government and private sector employers in recognizing and dealing with alcohol problems. The program also provides consultative and referral services required by employees suffering from alcohol and drug problems.

During 1982, the NWT Alcohol and Drug Coordinating Council renewed funding for 13 alcohol and drug community programs, including one new project at Rae.

### Corrections

Sustained overcrowding in institutes, record inmate population peaks and the handling of large numbers of short term prisoners presented major challenges to the Corrections Division in 1982.

The NWT has the highest rate of institutionalization of offenders of any province or territory in Canada. This fact, combined with shortage of space in NWT institutions, resulted in an increased emphasis on probation, community service orders and other alternatives to incarceration.

In both institutional and community corrections, Arctic House, Dechinta Society, Seventh Step Society, and many citizen probation volunteers, made major contributions by providing care and supervision to people who have come into conflict with the law. Inmates and probationers became increasingly involved in community service and restitution projects. Wilderness programs, education, and life skills training, were used to provide inmates with skills appropriate to the North, and encourage self-reliance and responsibility.

### **Family Children's Services**

In 1982, the trend continued for older children to come into care under the supervision of Superintendent of Child Welfare, due to behaviour problems, handicapping conditions or delinquencies. Selected receiving homes were changed from residences providing short term care for young children to residences providing care and supervision of older, difficult to manage children.

Child abuse reporting legislation was introduced in 1982. The legislation requires both professional and lay people to report suspected neglect or abuse to the department, and provides protection from prosecution to anyone who, in good faith, notifies the department that a child may require protection.

The Hay River, Fort Providence and Fort Simpson Dene Bands, with financial and other assistance from the Department of Social Services, organized summer camps for young people.

The family and children's services division is planning for the implementation of federal young offenders legislation. This legislation will be implemented gradually, allowing for the development of new facilities and resources as they are needed.

### **Aged and Handicapped**

During 1982, the department expanded its support of community groups providing services to handicapped persons. Of particular importance was a workshop presented in Rae-Edzo: "blindness is everyone's concern". This workshop, presented by the Canadian Institute of the Blind, was made possible through the cooperation and involvement of many agencies and individuals.

A wide variety of programs were undertaken by various departmentally funded groups throughout the NWT. These groups helped people suffering from handicaps to lead more independent lives.

Needs assessments were completed in communities to determine requirements for services to senior citizens.

### **Financial Assistance Programs**

A thorough analysis of food costs in communities across the Territories resulted in a shift of several communities from one scale of food assistance to another.

Food rates were increased by 10% in May, 1982 to help people on social assistance cope with increased living costs. Senior citizens were assisted by an increase in the supplementary benefit from \$50./month to \$75./month and the social assistance 'incidental' allowance was increased to \$125./month.

Financial assistance expenditures increased by 6.5% to \$7.4 million which 20% went to disabled or ill individuals, 19% to single parents with young children, 31% to unemployed persons, and 19% to supplement the income of low wage earners. Approximately 6,500 persons were helped each month through the financial assistance program.

### **Health**

#### **Minister's Report**

The Department of Health was under the direction of Arnold McCallum as minister up until July 1, 1982 when the portfolio transferred to Kane Tologanak.

The department was involved in several major initiatives, including presentation of new legislation on the practice of medicine in the Territories completion of an Inuvik health study; establishment of contractual arrangements for the Frobisher Bay Hospital and the staffing of physician positions; provision of health services to the communities of Tungsten and Pine Point and development of the NWT position on a proposed new Canada Health Act.

The minister introduced the revised Medical Professions Ordinance to bring into line rules governing the granting of licences and permits to practise medicine in the Northwest Territories.

The Inuvik health study, which reviewed health services in the Inuvik region, was completed and the final report presented to community representatives in Inuvik during September, 1982. A follow-up team was formed to deal with specific recommendations.

The Frobisher Bay Hospital was transferred through a contractual arrangement to the Government of the NWT on December 4. A local board of management will operate this facility. Plans are underway for the transfer of the Baffin nursing stations to the Territorial Government by the same contractual arrangement.

The department reached an agreement to staff the 18 physician positions across the Northwest Territories on behalf of Health and Welfare Canada.

The minister agreed to the provision of health services through the Department of Health for the communities of Tungsten and Pine Point. Formerly health services in both communities had been provided either directly or through funding from mining corporations.

The department received funding approval of \$424,000. from the federal minister of Health and Welfare Canada for a project to produce a health curriculum guide for NWT schools over the next 3½ years.

The minister was also active in discussions leading to the new Canada Health Act. This federal legislation replaces the existing legislation pertaining to hospital and medical care insurance.

### **Health Information and Promotion**

The Department of Health continued development of a comprehensive health information and promotion program. Increased utilization of the Dr. Otto Schaefer Health Resource Centre/Library by health and allied professionals, volunteer agencies, and the general public led to the creation of a librarian position to manage operations. The resource centre was jointly funded by the Territorial and Federal governments.

The Rae-Edzo health committee was funded for a third year by the Department of Health and Health and Welfare Canada, allowing community health awareness campaigns to continue.

A mortality study of burns and drowning among NWT youth up to 19 years of age was completed as part of the department's participation in a federal/provincial working group on child safety. A survey of the smoking habits of NWT school children began in support of the federal program "Towards A Generation of Non-Smokers".

### **Health Manpower Planning**

An agreement reached with Health and Welfare Canada designated responsibility for staffing of physicians with the Territorial Government.

The Department of Health will employ 18 physicians in six northern communities: Inuvik, Cambridge Bay, Fort Smith, Fort Simpson, Rae-Edzo, and Frobisher Bay. The development of recruitment strategies designed to retain physicians in the north will be pursued.

### **Training**

The Department continued to fund students pursuing careers in the health services area. Seven students were awarded bursaries in 1982.

### **Family Life Education**

The Department of Health's family life education project, funded by the family planning division of Health and Welfare Canada, focusses on the provision of clinically accurate information to health professionals and the general public on topics related to family life. Public service announcements were provided for radio and television, articles published in the local print media and material made available through the Dr. Otto Schaefer Health Resource Centre. Workshops were coordinated in NWT communities on topics such as birth planning, sexually transmitted diseases, family communication patterns and child development.

A study of the incidence of congenital anomalies in the NWT was done.

Work began on the design of an education program for the communities of Norman Wells, Fort Norman, Wrigley, and Fort Simpson to help deal with the social and cultural impact of development during the construction of the Norman Wells pipeline.

### **Insured Services**

The department administered a broad range of insured services including medical care, hospital care, pharmacare, medical travel, and other supplementary benefits.

In 1982, the Yellowknife Detoxication Unit of Northern Addiction Services came fully on stream as a Territorial Hospital Insurance Service (T.H.I.S.) funded program. The unit provides treatment to residents referred from across the NWT.

### **Fort Smith Health Centre**

The Fort Smith Health Centre is a modern, accredited health care facility operated through a local board of management providing in-patient care (15 beds), extended/chronic care (10 beds), out-patient and emergency services, home care, physiotherapy, public health, social services and doctors offices for visiting specialists.

Specialists and consultant services are provided on a regular basis from the Stanton Yellowknife Hospital.

Accreditation for the Fort Health Centre was renewed in 1982.

### **H.H. Williams Memorial Hospital**

H.H. Williams Memorial Hospital is a modern accredited health centre operated through a board of management, serving residents from the southern Great Slave Lake area, particularly the communities of Hay River, Pine Point, Fort Resolution and Fort Providence.

Specialists and consultant services are available on a regular basis from Stanton Yellowknife Hospital and physician services are provided through the Hay River Medical Clinic.

Accreditation for the H.H. Williams Memorial Hospital was renewed in 1982.

### **Stanton Yellowknife Hospital**

Stanton Yellowknife Hospital, a modern accredited 72 bed acute care hospital is operated through a board of management and provides a wide variety of in-patient services. Approximately half the patients come from outside Yellowknife.

On staff are specialists in orthopedics, otorhinolaryngology (ENT), obstetrics/gynecology, ophthalmology, internal medicine, and psychiatry. Through a contract with the federal medical services branch, these specialists regularly visit major communities in the Western Arctic.

In the area of rehabilitation medicine, the hospital has organized occupational therapy, physiotherapy, audiology and speech therapy programs. The Stanton regional laboratory provides basic laboratory services for other hospitals and nursing stations in the area.

The hospital has developed a psychiatric program which serves Yellowknife and major centres in the Fort Smith, Central Arctic and Inuvik regions. Two psychiatrists, a psychiatric nurse, a clinical psychologist and a psychiatric social worker provide this service.

A new facility is planned for Yellowknife. The facility will provide 115 acute care and 20 extended/chronic care beds, as well as expanded diagnostic and treatment services.

Accreditation for the Stanton Yellowknife Hospital was renewed in 1982.

### **Baffin Regional Hospital**

The Baffin Regional Hospital formerly the Frobisher Bay General Hospital, is a modern accredited hospital providing 35 acute beds and servicing the health care needs of all Baffin region communities.

An 11 member board of management with broad representation from the Baffin region assumed full responsibility for the delivery of treatment services and day to day operations.

Accreditation for the Baffin Regional Hospital was renewed in 1982.

### **Medical Transportation**

The Winnipeg Medical Boarding Home for Keewatin residents receiving medical care in Winnipeg was purchased by the Department of Health and has been operating successfully since its opening on December 1, 1981. In 1982 major renovations to the rooms were completed.

The Department of Health, in co-operation with the Department of Social Services and Health and Welfare Canada, completed the final draft of a new medical travel policy for the NWT. The policy was tested in the Baffin region and is in the early stages of implementation in the other regions. The policy streamlines administrative procedures and will alleviate recurring problems that have occasionally resulted in less than adequate service to NWT residents.

### **NWT Health Care Plan**

The NWT health care plan provides medical care and hospital insurance to eligible NWT residents with no premiums payable. In addition, certain specified conditions not insured under the plan are covered by other programs.

Supplementary health programs are designed to provide financial assistance, beyond the scope of the health care plan, for residents eligible under specific diseases. Subsidized medical travel programs provide for transportation costs to NWT residents of "other" status that do not have this provision through employee benefits. A pharmacare program is also available to provide payment of certain prescription drugs listed in the NWT pharmacare formulary for senior citizens, treaty Indians, Inuit and NWT residents eligible under the supplementary health program.

### **Medical Care Plan**

The Medical Care Plan provides payment for insured services at 100% of the approved fee schedule of the province/territory within Canada in which the service was rendered. All persons registered under the NWT health care plan are eligible for benefits under medicare.

The plan covers all medically required services rendered by physicians in the office, clinic, hospital and home; and certain surgical-dental procedures required to be performed in a hospital. Surgical procedures, anaesthetic services, and complete maternity care are also provided.

### **Territorial Hospital Insurance Services**

The NWT hospital insurance plan is administered under the direction of the Territorial Hospital Insurance Services Board, whose members are appointed by the Commissioner with advice from the Legislative Assembly.

The NWT hospital insurance plan provides coverage for a broad range of in-patient and out-patient services.

### **Federal Health Services**

The Department of National Health and Welfare, through its Medical Services Branch, assists the Territorial Government in the administration of health ordinances and operates health facilities throughout the Territories.

Included in these facilities are 39 nursing stations, eight health centres, six health stations, two cottage hospitals and two general hospitals. In addition to these federal facilities, there are three general hospitals under the direct supervision of the Territorial Hospital Insurance Services Board.

Medical care is an insured service of the Territorial Government provided by private practitioners in Yellowknife, Hay River and by medical officers and consultants of the Department of National Health and Welfare elsewhere. Medical officers of health, public health nurses, environmental health officers and community health representatives are employed by the Department of National Health and Welfare.

Dental care is provided by private practitioners in Yellowknife and Hay River and full-time government employed dentists and dental therapists located throughout the Northwest Territories.

### **Local Government**

#### **Minister's Report**

There were some changes in the organization of the Department of Local Government in 1982. A new division was formed to bring together all the elements in headquarters which are involved in the planning and physical development of communities, and a new advisory group in the directorate now provides support to Minister James Wah-Shee in policy development legislative matters. Overall, there was a reduction in the number of divisions in the department and there was a shift of resources from headquarters to the regions.

The department worked with a committee of the mayors of the tax-based municipalities to rewrite the Municipal Ordinance. Still being discussed, is the need to replace the Municipal Ordinance with something more suitable for the hamlets.

The minister is signatory to a memorandum of understanding between COPE and the Government of the NWT on the establishment of a Western Arctic Regional Municipality. Arising out of a motion sponsored in the Legislative Assembly by Nellie Cournoyea, MLA for the Western Arctic, the memorandum of understanding sets up a task force which will bring to the Legislative Assembly a proposal for a Western Arctic Regional Municipality which has the support of the communities.

Construction of community recreation facilities continued to be a priority in the department, with a new arena opened in Yellowknife, community hall and municipal office complexes completed in Fort Good Hope and Rae Lakes, and construction underway in Cape Dorset, Fort Resolution and Sachs Harbour. An ambitious program of construction is planned for the next five years based on new facilities assistance policy approved by the Executive Committee.

A high priority for the Minister of Local Government is the development of safe and sanitary community environments. A major publication entitled "Community Water and Sanitation Services Northwest Territories 1981" illustrates the progress which has been made since 1960.

Capital investment to date in water and sanitation infrastructure is valued at \$186.2 million. A further \$70.5 million will be required to bring services up to an acceptable standard in all the communities.

In November, the minister announced a revised land valuation policy which effectively reduces the cost of land, particularly to private homeowners in the smaller communities, and introduces a consistent pricing policy for the sale and lease of Commissioner's land throughout the NWT.

### **Municipal Affairs**

A new unconditional grant formula for tax-based municipalities was welcomed by local councils, as it recognized the ability to raise local revenues while taking into account the variance in the actual expense of providing municipal type services in different areas of the NWT. The change in the municipal grant structure from conditional to unconditional is supportive of local decision-making and the autonomy of municipal corporations.

The homeowner's property tax rebate program was increased to \$300. for resident homeowners in a city, town or village and to \$75. for residents in areas in which the level of taxation is comparatively low.

The incorporation of the communities of Lake Harbour and Cape Dorset as amalgams brought the total number of incorporated municipalities to 12. The municipal administration training program. To date there have been 44 graduates in the introductory level, 30 in the intermediate level, and 17 in the university level. Enrollment in current training programs is high.

### **Community Planning and Development**

With the department's assistance, Yellowknife, Pine Point and Hay River undertook major planning studies in 1982 culminating in new plans for each of these centres. In response to developing pressures created by intensive resource development activity in Tuktoyaktuk and Norman Wells, detailed planning investigations were initiated to prepare new plans for these communities. Work continued in preparing and finalizing development plans for the communities of Lake Harbour, Pond Inlet, Chesterfield Inlet, Fort Norman, Fort Liard, Jean Marie River, Snare Lake and Coppermine.

A major study to define a new planning ordinance was begun.

An extensive upgrading of the sewage lagoon in the town of Inuvik was carried out.

Improvements in community fire safety arrangements were completed in 18 communities.

A unique community centre project which includes a multi-purpose community hall, community offices and a nursing station was completed at the Lakes. Essentially all instruction was done by local residents.

### **Land and Assessment**

Considerable effort was spent in 1982 reacting to the demand for serviceable lots in Norman Wells and Tuktoyaktuk arising from the developmental loan. A major land acquisition was completed to obtain more residential land in Norman Wells by relocating the upper air station in that community.

A grant of easement was made to Interprovincial Pipe Line (N.W.) Ltd., for Commissioner's lands crossed by the Norman Wells pipeline.

An additional 10 communities were added to the 1982 assessment roll and all mines in the NWT were re-assessed for the 1983 taxation year. The DEW Line sites and the recreational areas will also be assessed and added to the 1982 headquarters roll. Thirty-seven annual assessments were completed in various regions along with seven taxbased communities, the C.N.R. microwave sites, lodges, the NWT highway system and the federal government national parks.

### **Community Airports**

A joint Territorial/Federal program continued to improve airports and aviation support services to communities.

Runway construction was completed at Repulse Bay, Gjoa Haven, Spence Bay, Fort Liard, Fort Norman and Wrigley, and air terminals were constructed at Repulse Bay, Spence Bay and Fort Norman. Runway lighting systems were improved at Spence Bay, Broughton Island, Pangnirtung, Sanikiluaq and Whale Cove.

Preliminary planning and design is well underway for the construction of airports at Pelly Bay, Paulatuk, Arctic Red River, Fort Good Hope, Fort Franklin, Lac La Martre, Rae-Edzo, Rae Lakes, Fort Providence and Snowdrift.

Emergency services vehicles were delivered to Sanikiluaq, Pond Inlet, Broughton Island, Cape Dorset, Pangnirtung, Chesterfield Inlet, Repulse Bay, Whale Cove and Spence Bay.

The airport staff training program, through three formal courses at the Thebacha College in Fort Smith, successfully placed 16 Northerners as certified observer/communicators. In addition three regional workshops were held for current airport employees in the Inuvik, Keewatin and Baffin regions to reinforce and review observer/communicator duties.

The Arctic airports policy is being reviewed by Transport Canada. A proposal to transfer full program responsibility to the governments of the Yukon and the Northwest Territories is awaiting a decision by the federal cabinet.

### **Sport and Recreation**

New recreation staff positions were established in the Fort Smith and Kitikmeot regions. Decentralization of division programs and services can be fully implemented with recreation staff now in each region. Regional staff will place particular emphasis in 1983 on developing community recreation programs, improving community recreation facilities and training recreation leaders.

Northern Games were held in Coppermine and Rankin Inlet. Fort Smith hosted the Dene Games. Plans are underway for a winter Northern Games in the Inuvik region and Baffin organizers planned to hold their first regional games in summer 1983.

The seventh Arctic Winter Games were held at Fairbanks, Alaska, and involved over 300 NWT athletes. Plans are now underway for the 1984 Arctic Winter Games to be held in Yellowknife.

Sport North added two new member organizations, canoeing and orienteering, bringing their total number of member sport organizations to 28.

### **Aboriginal Rights and Constitutional Development**

#### **Minister's Report**

The Minister for Aboriginal Rights and Constitutional Development, James Wah-Shee, made significant progress in the portfolio during 1982.

As a result of increasing activity in this portfolio and in response to requests from the Inuit Tapirisat of Canada, Dennis Patterson was appointed as the Associate Minister for Aboriginal Rights and Constitutional Development, and is primarily responsible for aboriginal rights and constitutional matters as they relate to the eastern Arctic.

On April 14, 1982, residents voted in a plebiscite relating to the division of the Northwest Territories into two and western territories. This vote sparked a July meeting of a Constitutional Alliance resulting in the establishing of a Western Constitutional Forum (WCF) and a Nunavut Constitutional Forum to develop and promote, through public consultation, the constitutional framework of new territories.

The Legislative Assembly appointed four members to the Constitutional Alliance; two participate in the Western Forum and two in the Nunavut Forum. James Wah-Shee is chairman of the Constitutional Alliance and the Western Constitutional Forum and Dennis Patterson is chairman of the Nunavut Constitutional Forum.

At the local and regional government levels, unique changes are also taking shape. In the Mackenzie corridor communities the Dene are exploring ways of blending the best of both band and municipal council systems. In the eastern Arctic, the Baffin Regional Council is legally established and evolving. The Keewatin and Kitikmeot regions are also pursuing this option. In the west, the Inuvialuit communities are working with the Territorial Government to develop a Western Arctic Regional Municipality. In the south Mackenzie, three tribal councils are being developed in conjunction with the Territorial Government.

The Government of the NWT continued to participate in the three NWT aboriginal claims negotiations as a member of the federal team.

#### **Aboriginal Rights and Constitutional Development Secretariat**

The Aboriginal Rights and Constitutional Development Secretariat provides advice and support to the minister; manages and coordinates the participation of the Territorial Government in the three Northwest Territories aboriginal claims negotiations and develops options for political and constitutional changes.

The work done by the Legislative Assembly in developing a constructive working relationship with native organizations enabled considerable progress in 1982 toward the development of mechanisms for political and constitutional reform.

The Legislative Assembly has appointed a Special Committee on Constitutional Development chaired by Nick Sibbeston, MLA for Mackenzie-Liard to conduct discussions with groups and the public of the western Arctic.

A pamphlet comparing the Government of the Northwest Territories and the Denendeh Government proposal was drafted and distributed throughout the west. A follow-up document was prepared that discussed in more detail a number of issues identified in the Denendeh Government proposal. This document was used as a working paper at the second Western Arctic Constitutional Conference in September.

The secretariat was also involved with the COPE proposal for a Western Arctic Regional Municipality. COPE and the Government of the Northwest Territories have formalized an implementation mechanism. The government is now represented by the Department of Local Government at these discussions.

The secretariat continued to be involved in the Dene/Metis and ITC claims negotiations. After an extended inactive period, ITC began discussions on the land and resources component of their claim. The initialled wildlife agreement-in-principle has been shelved for the time being, due to federal departmental opposition to certain key elements.

In August the Dene and Metis group held assemblies where they adopted similar claims eligibility positions. They also agreed to jointly explore the formation of one organization to represent all claimants and for the short-term, they agreed to hire an independent person to represent both groups as chief negotiator.

## Northwest Territories Housing Corporation

### Minister's Report

The NWT Housing Corporation is responsible for the development, maintenance and management of social housing programs, to make an adequate standard of housing available to residents of the Northwest Territories.

During 1982, Arnold McCallum as responsible minister, made strong representation to the federal Minister of Employment and Immigration concerning the lack of LEAP funding to the NWT. These efforts were rewarded with the announcement in September of an \$800,000 funding program for the NWT to be applied to native housing. A federal-territorial working group will jointly coordinate program delivery.

### Finance and Administration

The capital budget for the housing corporation in 1982 totalled \$22,233,975 with 66% funded by Canada Mortgage and Housing Corporation (CMHC) and 34% from the Government of the Northwest Territories.

### Operations

Programs of the NWT Housing Corporation are delivered by approximately 40 staff members in six district offices in Frobisher Bay, Rankin Inlet, Cambridge Bay, Hay River, Yellowknife and Inuvik.

### Programs

The corporation provides housing to fill a variety of needs. For those individuals capable of operating and maintaining their own home, the corporation provides small settlement home assistance grant (SSHAG) and the rural and remote mortgage assistance program.

For families who cannot afford the costs of owning and operating their own home, or in areas where homeownership is not an option, the corporation delivers rental program.

The small settlement home assistance grant is an ownership program designed for low income families. The program calls for a contribution of sweat equity from the client in the construction of a modest home, and provides a maximum grant of \$30,000 to assist with log hauling, material and tool purchases, and freight charges. An expenditure of \$500,000 was approved in 1982 by the Government of the Northwest Territories to provide some labour funding to SSHAG clients. A further \$150,000 was also provided for labour through the Department of Economic Development and Tourism.

In total 42 clients qualified and were assisted under the SSHAG program in 1982.

A total of \$750,000 for ten experimental housing units was channelled through the housing corporation from the Government of the Northwest Territories for community groups in Fort Good Hope and Fort Resolution to construct five log homes in each community. The housing corporation monitored the project and provided funding as required to each group. All units are scheduled for completion in 1982.

The rural and remote housing program, offered by the housing corporation in partnership with CMHC, assists clients by subsidizing monthly mortgage payments to 25% of adjusted family income.

The northern territorial rental purchase program gained popularity in 1982 throughout the Territories. This is a rent to purchase program, whereby a portion of rent paid is applied to the purchase price of the unit. Rental units constructed prior to 1974, on land available for sale or lease, are eligible for purchases under this program. Thirty-seven units were sold, or are in the process of being sold, in communities including Arctic Bay, Frobisher Bay, Rankin Inlet, Aklavik, Tuktoyaktuk, Fort Franklin and Fort Providence.

In an effort to maintain the corporation's rental stock in a good state of repair, upgrading and major repairs were carried out under the extra-ordinary maintenance program. Included were such items as upgrading of heating and electrical systems, site, pad and foundation repairs, and window and door replacement. A total of \$904,000 was applied to 589 units.

The housing corporation cost shares with CMHC in the enriched emergency repair program, designed to upgrade health and safety factors within rental units and to extend their life expectancy. Fifty-two units in the Hay River and Inuvik districts received these repairs, at a total cost of \$395,000.

In 1982, a total of 148 porches were constructed at a cost of \$125,800. Further expenditures under the rent program include the purchase of furniture for senior citizens' homes and capital equipment for housing associations and authorities.

A review of rental scale, in an effort to develop a simple, more equitable program was done in consultation with housing associations and authorities.

Skills training is a major function carried on by the corporation. Seven training workshops were held across the Territories in 1982 for housing associations.

### Construction

The extreme cost and complexity of attempting to supply, ship and erect new houses all in one year resulted in a decision to cycle house design and construction over two years. 1982 was the first year of a cycle, which included land assembly, site preparation and preliminary pad and foundation work for 84 units.

During the present period of funding restraint, a major emphasis was placed on rehabilitation of existing homes. 263 units were rehabilitated with upgrading of insulation values, installation of energy efficient doors and windows and modernization of plumbing and electrical fixtures.

A roof retrofit program to resolve condensation problems experienced in some houses was begun. The program is expected to extend into future years.

The Corporation undertook to develop a simple, well-insulated, well-built house, that would be long lasting and enable renovation and interior change at minimum cost. Two house designs were developed and approved.

## Workers' Compensation Board

The Workers' Compensation Ordinance provides recompense to the injured worker for wage loss due to disability from personal injury by accident arising out of employment, without recourse to litigation.

The ordinance extends Workers' protection to all accidents arising out of employment; not only those caused by negligence of the employer. It places the adjudication of claims in the hands of the Workers' Compensation Board instead of the courts and it makes the employers' liability collective instead of individual.

During 1981, benefits to workers were based on a years' maximum assessable remuneration of \$20,400. per year. Effective January 1, 1982 this amount was raised to \$23,200. per year.

During 1982, a total of approximately 3,250 new claims were processed with the total number of employers numbering 3,700.

The board raised pensions of all existing pensioners to 1981 levels of payment on \$20,400. Payments to widows were raised to \$561. per month, with payment to dependent children raised to \$127.50 per month.

1981 was the final year of the test for the assessment merit rebate program. In 1982 the board considered a new program on assessment experience rating for all employers.

Recent increases in the number and severity of reported accidents have led to increased emphasis on accident prevention and safety awareness in the workplace.

## Highway Transport Board

On July 1, 1982 Arnold McCallum was appointed minister responsible for the Highway Transport Board. During the year, the minister took steps to increase and strengthen board membership.

A legislative proposal put forth by Mr. McCallum will see the membership increased to five, a quorum established for board meetings and hearings and enhancements to the regulations governing the legislation.

The board, which regulates the commercial trucking industry in the NWT, will be reviewing the provisions of the Public Vehicle Ordinance and inviting suggestions from the industry on ways to improve legislation.

## Legislative Assembly Report

### *Seventh Session of the Ninth Assembly*

The session, which opened February 2, 1982 in Yellowknife, marked the second budget presented by the NWT's first Minister of Finance, Hon. Tom Butters. The 1982-83 budget totalled more than \$443 million, including \$350 million in operations and maintenance and \$73 million in capital spending, representing a 19-per-cent increase from the previous year.

Commissioner John Parker said the budget reflected the Assembly's priorities to the greatest extent possible, and that with the Executive Committee's new executive planning system, an improved ability to shift financial resources to accommodate Legislative Assembly priorities was anticipated.

The Executive Committee presented a legislative program of 12 bills, nine of them financial ordinances. Except for financial bills, all of them had been reviewed by the Assembly's Standing Committee on Legislation, under the chairmanship of Bob MacQuarrie.

A bill amending the Small Business Loans and Guarantees Ordinance was passed. The bill allows a business to apply for a loan regardless of its estimated gross revenue; allows loans and guarantees for working capital to acquire current assets; increases the fund to \$11 million from \$5 million; and increases maximum loans and loan guarantees to \$500,000 from \$100,000.

As the minister responsible for the status of women, Mr. Braden introduced the NWT Native Women's Association, which made a presentation to the Assembly on their activities and funding needs. Members supported Mrs. Sorensen's motion that the minister work with the association to develop a means for the group to receive stable and continuing core funding from the government.

Two taxation bills were passed. One amended the Petroleum Products Ordinance to raise taxes on gasoline and other petroleum products; abolish taxes on oil for heating buildings, propane, butane and naphtha; establish a tax rate for fuel on the basis of the Yellowknife gasoline price; and raise the interest rate on overdue taxes.

A second bill amended the Tobacco Tax Ordinance to increase the tax on cigarettes. The tax rate was raised, in order to compensate for lower taxation of some fuels and maintain the tax level on gasoline in off-highway communities.

The Northwest Territories Housing Corporation Loan Ordinance, 1982, to allow the housing corporation to borrow funds for building or acquiring public housing projects, was approved by the Assembly.

## Other Legislation

Other financial bills passed during the session included the Appropriation Ordinance 1982-83, which contains the budgets of all the departments reviewed by the House; the Supplementary Appropriation Ordinance, No. 2, 1981-82, covering additional civil service expenditures; the Financial Agreement Ordinance 1982, allowing the Commissioner to enter into agreements with the Government of Canada for operating and capital grants the NWT; and the loan Authorization Ordinance No. 1, 1982-83, allowing the Commissioner to borrow money to make loan to municipalities or other persons.

An amendment to the Vital Statistics Ordinance allows children to be registered under the surname of their father, hyphenated or combined with the surname of the mother. Amendments to the Plebiscite Ordinance clarified administrative matters and powers related to the holding of plebiscites. An amendment to the Legal Questions Ordinance allows the Minister of Justice and Public Services rather than the Commissioner to refer legal questions to the court. An amendment to the Municipal Ordinance dealt with eligibility of council members, and allows municipalities to pass noise control by-laws. An amendment to the Wildlife Ordinance allows corporations as well as individuals to export game meat.

**Ninth Session of the Ninth Assembly**  
The eighth session opened in Inuvik on May 12. Legislature having travelled to the Mackenzie Delta community to hold one of the field sessions.

Commissioner John Parker in his Opening Address, said that southern attention was focussing on the north's energy resources as one of the means of attaining energy self-sufficiency and providing a partial solution to Canada's employment problems. Faced with this national perspective, it was crucial that the Assembly and the Territorial Government take concerted action to ensure that the communities and people of the Northwest Territories were better able to meet the impacts of non-renewable resource development.

Mr. Parker noted that Norman Wells would receive \$554,000 in 1982-83 for new residential and industrial lots, as well as money for a new community plan to cope with the growth expected as the Imperial Oil operation is expanded and a pipeline is built south to Zama Lake, Alberta. Tuktoyaktuk, the community most affected by Beaufort Sea oil and gas exploration, will receive \$3.5 million worth of water and sanitation projects over the next two years.

#### Legislation

A legislative program of six bills was set out and approved with some changes by the Assembly during the session. One major bill set out a new financial assistance program for NWT students taking post-secondary education, which was developed following recommendations made by the Special Committee on Education.

Another major bill introduced major revisions to the Financial Administration Ordinance to reflect the evolution of financial management in the Government of the NWT, to highlight accountability of program managers for financial administration, and to reflect current accounting principles for public sector reporting and disclosure.

Other bills amended the Forest Protection Ordinance to allow for emergency forest fire fighting conscription of 16 and 17 year old males and to remove discrimination against women; increased the minimum hourly wage in the NWT to \$4.25 from \$3.50, and the minimum hourly wage for workers under 17 to \$3.75; and allowed the Minister of Education to lower the school year from 190 days to a minimum of 170 days. Supplementary appropriations for the 1981-82 financial year also were approved.

The new post-secondary financial assistance legislation passed following some debate. The program, which took effect in the 1982-83 school year, provides a basic grant for full tuition costs, two return trips a year home, and books and supplies for all students who meet residency and schooling requirements. Dene, Inuit and Metis students receive a supplementary living allowance grant. Loans,

forgivable if a student returns to work in the NWT, and scholarships also will be available. Decisions on financial assistance will be made by a Financial Assistance Review Board, based on the recommendations of four regional boards.

#### Committee Activities

The Assembly agreed to an expanded scope of activity for the Standing Committee on Legislation. As well as reviewing draft legislation prepared by the government, the committee now will review orders and regulations to make sure they comply with the ordinances under which they are issued, and will monitor motions adopted by the Assembly which require legislative action. The Committee may undertake travel if it is required, in addition to its previous terms of reference.

The Standing Committee on Finance presented its 16th report to the Assembly on the Financial Administration Ordinance and the supplementary appropriations bill.

**Ninth Session of the Ninth Assembly**  
Acceptance in principle of division of the NWT, support for the principle of responsible government and greater financial independence for the Government of the Northwest Territories were promised by the federal government as the ninth session of the Ninth Legislative Assembly came to an end.

The long-awaited cabinet decisions were announced to the Assembly by Indian and Northern Affairs Minister John Munro during a special evening sitting November 26.

Mr. Munro said the Government of Canada accepted division of the Northwest Territories as long as comprehensive native land claims were settled; NWT residents continued to support division; and a Northern consensus was reached on boundaries, location of any new administrative centres, and distribution of powers among different levels of government in the NWT.

He pledged federal support for the principle of responsible and politically accountable government in the NWT, with the form of that government being worked out in the North. To back up the commitment, he announced a new system of financing the NWT government which would confirm that planning and political accountability rests with the Government of the Northwest Territories, and said he had been authorized by cabinet to develop ways to offset some of the extra costs placed on the North by resource development.

The minister said that the agenda for political and constitutional change was not open-ended. He ruled out provincial status at this time, and added that the federal government will maintain its ownership and control over land and non-renewable resources in the North, in keeping with its priorities and obligations to protect the national interest.

Mr. Munro confirmed that the Northwest Territories will be represented equally with other jurisdictions at the First Ministers' Conference on aboriginal rights to be held in the spring of 1983.

The Assembly passed a motion supporting the principle that aboriginal peoples have special rights and recommending that the new Canadian Constitution should contain a charter of aboriginal rights.

Intense debate followed a motion which proposed the creation of a three-member Territorial Electoral Boundaries Commission to study the 22 existing constituencies and see if changes were needed. The Assembly narrowly agreed to support the immediate appointment of a boundaries commission which would report at the next or the spring session.

The Report of the Assembly's Special Committee on Education was accepted after amendment, as the basis for legislation to put the changes into effect.

## Legislation

Twenty-four bills, including eight new ordinances, were passed and assented to during the session. Three of the bills – amendments to the Public Service and Education ordinances to clearly define government employees, and a new ordinance limiting wage increases in the public sector to six and five per cent – sparked debate, with several MLAs expressing concern about salaries for housing and education association and municipal employees.

Other bills provided for a fine option system which would allow offenders to do community service work as an alternative to being jailed; transportation of dangerous goods on NWT highways; and a Mining Safety Ordinance.

The Council Ordinance was amended to allow by-elections to be held up until the last six months of an Assembly's term rather than the last year of the term. The amendment allowed a by-election to be called for January 17, 1983, in the riding of Keewatin North because of the resignation of the incumbent MLA.

## Standing Committee on Finance

The Assembly approved changes in the mandate of its Standing Committee on Finance. The Standing Committee will become the Standing Committee on Finance and Public Accounts, providing the NWT Legislature with the third of three stages of legislative financial accountability known in all other Canadian legislatures. The committee already helps set spending priorities and review the government's subsequent spending and financial management operations expenditures.

## Commonwealth Parliamentary Association

Legislators from all across Canada and from other parts of the world visited the Northwest Territories in the summer of 1982 to attend the 22nd Canadian Regional Conference of the Commonwealth Parliamentary Association.

## Constitutional and Political Development

In January, the first Western Arctic Constitutional Conference was held in Yellowknife, with 35 official delegates representing aboriginal organizations, municipalities and territorial-wide organizations in attendance.

That working group developed a paper comparing the Denendeh Government proposal, which had been the main topic of discussion at the conference, with the Government of the NWT's structure. A more detailed working paper was prepared for delegates to the second conference.

The second conference was held in Yellowknife Sept. 14-16. Delegates adopted six principles for constitutional development; agreed that a mechanism to protect aboriginal rights is needed once settlements are reached; agreed to extend residency requirements for voting and seeking office beyond one year to a reasonable, constitutionally-accepted time; and agreed that some form of guaranteed representation for native peoples should be included in any new form of government developed in the western Northwest Territories. Delegates agreed to meet again within six months.

As a result of efforts by the aboriginal organizations working in conjunction with the Government of the NWT, the NWT Constitutional Alliance was formed. This Alliance included the Dene Nation, Métis Association of the NWT, Committee for Original Peoples' Entitlement, Inuit Tapirisat of Canada and the Legislative Assembly of the NWT. Later in the year, the alliance divided into two sub-groups: the Western Constitutional Forum and the Nunavut Constitutional Forum, which met separately and worked toward creating the constitutional underpinnings for two separate territories.

The Assembly agreed during the February session to endorse the efforts of the alliance and approved a motion commending that four MLAs be named to sit on the alliance.

During that discussion, Assembly members passed a motion calling for the immediate appointment of a Minister for Inuvavut. At the end of the session, Commissioner Parker named Mr. Patterson as Associate Minister of Aboriginal Rights and Constitutional Development.

### ***Division of the NWT***

A plebiscite on division of the Northwest Territories held on April 14, 1982, resulted in 56% of voters favouring dividing the NWT into two jurisdictions.

The first plebiscite was held under a new Plebiscite Ordinance, and it was the first time all NWT residents had been consulted by their government on such a massive scale. All residents of the NWT were enumerated, and all the languages of the NWT were used in the voting.

The plebiscite was the first vote to be administered from within the Territories, under Chief Plebiscite Officer David Hamilton. Normally, the Chief Electoral Officer for Canada administers elections and votes in the NWT.

To be eligible to vote in the plebiscite, voters had to be resident in the NWT for three years.

The results of the plebiscite were officially presented to, and accepted by, the Assembly during the Inuvik session.

With one abstention, the Assembly passed a motion asking the Government of Canada to divide the NWT and to name a federal boundaries commission to recommend boundaries for a new eastern territory. The motion suggested that this commission should report on its final recommendations in time for consideration at a special session in the spring of 1983.

A motion setting up a Special Committee on Division, including all 22 MLAs in its membership, also was approved at the May session. This committee will be responsible for making recommendations on how existing and future legislation, policies and practices of the Government of the Northwest Territories might be amended or developed to reflect the duality of interests between the eastern and western parts of the NWT. It will also consider possible modifications to budgetary and capital planning to reflect eastern and western interests and prepare for the impact of division. The committee also is authorized to recommend transitional measures in preparation for division.

### ***Clerk of the Legislative Assembly***

The Office of the Clerk provides professional advice on parliamentary procedure to the Speaker, Chairmen of Committees of the Whole and individual MLAs, and serves members' needs in finance, administration, research and public affairs.

The Office of the Clerk reports to and takes direction from the Speaker of the Assembly, who answers to the Legislature for the activities of the Clerk's office.

A public affairs unit began operation in 1982. Such offices have only recently been set up in legislatures in the United Kingdom, United States and Australia, and few exist anywhere else in Canadian legislatures.



# Yukon Territory

## Yukon Legislative Assembly

The Yukon Legislative Assembly consists of 16 elected members, 7 of whom represent districts in Whitehorse. The remaining 9 members represent outlying electoral districts. The Hon. Don Taylor, member for Watson Lake, is the Speaker.

After the general election of June 7, 1982, the Assembly consisted of nine Progressive Conservatives, six New Democrats, and one Independent.

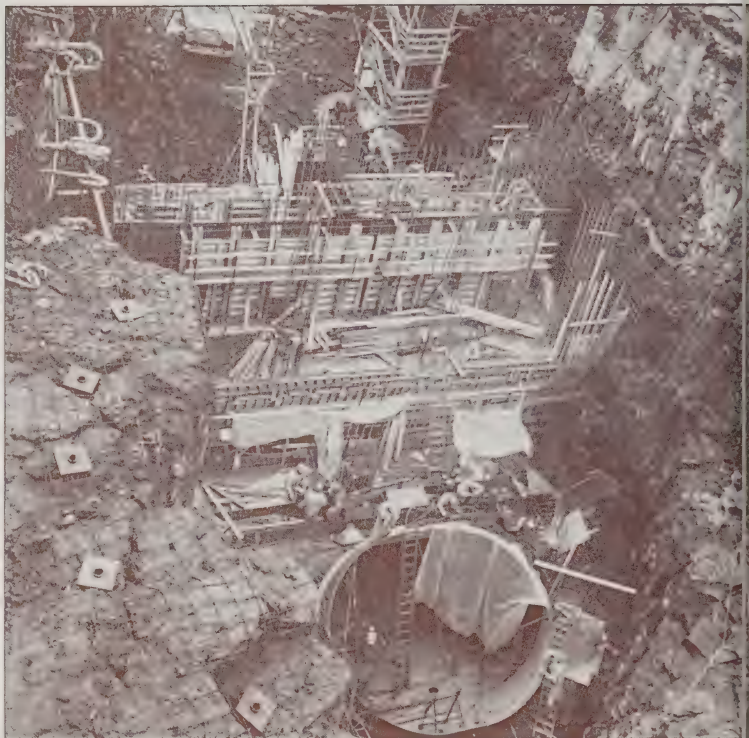
The 25th Legislature met for the first time on July 12, 1982, and discontinued its meetings on July 14 until the next session. During the two-day meeting a speaker was elected, legislative committees were struck and six bills were passed. These included an Interim Supply Bill, as the Budget had not been passed before the election call.

Commissioner Doug Bell opened the second session of the 25th Legislature on November 1, 1982, with the Speech from the Throne. Nineteen government Bills were introduced. All were passed and assented to, including an operating and maintenance budget for 1982-83 of \$116.5 million and a capital budget for 1983-84 of \$24.4 million. Two private members' Bills were introduced, but neither was passed. The Assembly adjourned on December 9, 1982 until the next session.

The Commissioner opened the third session on March 22, 1983, with the Speech from the Throne. During the session, an operating and maintenance budget of \$137.6 million was passed. Twelve government Bills were introduced, eleven of which were passed and assented to. One private member's Bill was introduced, but was not debated.

The Standing Committee on Rules, Elections and Privileges reviewed and revised the Standing Orders of the House. The new rules were adopted on April 13, 1983.

Having sat for 22 days, the House adjourned on May 3, 1983.



Hydro Development at Whitehorse. (Photo: Whitehorse Star)

### *Office of the Clerk of Assembly*

This Office provides advice on parliamentary procedure to all members of the Legislative Assembly. Administrative, research and support services are provided to the Assembly during session and to the various committees and individual MLAs on a day-to-day basis.

The Clerk of Assembly also provides administrative support to the Commonwealth Parliamentary Association and to the Yukon Elections Board.

### *Executive Council Office*

The Executive Council Office (ECO) provides a wide range of services to the Executive Council of Yukon and its supporting committee structures, as well as to the Office of the Commissioner, the Internal Auditor, and the departments of the Government. These services, both advisory and administrative, allow for the orderly and efficient functioning of the executive arm of the Government of Yukon.

Four sessions of the Legislative Assembly, were held during the fiscal year. 34 government bills were passed and given assent; 10 of these were appropriation bills.

Major legislation included amendments to the Motor Vehicles Act, the Landlord and Tenant Act, the new Agriculture Development Act, the Land Planning Act and the Public Sector Compensation Restraint (Yukon) Act. Major changes to the Territorial Court Act were introduced during the year and passed soon after.

During the year, several major agreements were signed with the federal government. They covered the provision of RCMP services for 10 years, 2 job-creation programs and research on the impact of Beaufort Sea oil and gas development.

Several changes have been made in the Office's organization. The Public Affairs Bureau has been added, so that its staff is more closely tied to the Executive Council's decision-making process. After the election, Cabinet support staff increased from 7 to 12. Cabinet committees and advisory committees of deputy ministers were restructured, and a Management Board was established.

The Office continued to provide administrative support to the Commissioner of Yukon, the Commissioner's Awards Committee, and the Internal Auditor.

#### **Plans 1983-84**

A number of long-standing internal government committees will be coordinated by the ECO, in order to ensure that every committee reports directly to Management Board or Cabinet and is accountable.

Cabinet support staff are working to link Cabinet's long and short-term goals more closely with the Government's programs. All programs are being reviewed to assess their economy and effectiveness.

## **Education, Recreation and Manpower**

### **Responsibilities**

The Department is responsible for providing primary, elementary and secondary education to all school aged children in Yukon by developing curricula, administering and evaluating all educational programmes, hiring and certifying teachers and developing legislation, policies and agreements.

### **Program Highlights 1982-83**

- French Immersion was extended to include Grade 2;
- new schools were opened at Pelly Crossing, Porter Creek and Old Crow;
- the 8th Annual Conference of School Committees was held in November;
- micro computers were introduced into all Yukon high schools;
- the Department of Education re-examined its philosophy of education, goals and objectives. This project will continue through the 1983-84 school year, and input from the public will be sought;
- a Department staff re-organization took place.

### **Goals and Objectives 1983-84**

- the Department will continue to re-examine its philosophy of education, goals and objectives;
  - the French Immersion pilot project and plan for a French maintenance program will be completed;
  - local units for the Social Studies Year 2 will be developed;
  - teaching and management techniques in Junior High Schools will be improved.
- A supervisor position has been created for this purpose.

### **Advanced Education & Manpower**

This Branch is responsible for institutional training, apprenticeship training, tradesman certification, industrial training, post-secondary student financing, manpower planning, and employment development programs.

### **Program Highlights 1982-83**

The Yukon Vocational and Technical Training Centre and Yukon Campus offered a broad range of Adult Education courses through Academic, Business and Applied Arts, Trades and Technical, and Extension Services programs.

Major emphasis in 1982-83 focused on expanding programs and improving organizational effectiveness and student support services. New initiatives included an increase in part-time offerings, vocational and career awareness services, the certificate program in Business Administration, College Preparation and expanded offerings in Trades Upgrading. Special trades programming was offered as part-time employment bridging. In addition, pre-trades welding was re-established, surveying and drafting will be offered every other year. Finally, the Department developed a Community Learning Centre in Mayo, bringing the number of CLC's in Yukon to four.

Curricula continue to be updated for course in motor vehicle and heavy equipment mechanics, food services, B.T.S.D. and the nursing assistant program. Major curriculum revisions were also initiated in Business Education (Secretarial, Clerk Typist, and Accounting) with the intention of creating core courses with a degree of individualization. The results will allow part-time access to full programs for Whitehorse and Community students, will allow entry for full time students and serve as a model for creating similar efficiencies in other programs. Basic introductory courses to computers were also initiated.

In 1981-82, 1744 students were enrolled in 127 courses offered at the Yukon Vocational and Technical Training Centre. Forecasts for 1982-83 include an 8 per cent increase in the number of students (1876) and a 22 per cent increase in the number of courses available (144).

The 1982-83 years saw the number of registered apprentices in Yukon maintained at last year's level, with 163 apprentices registered in 13 trades as of January 1983. However, poor economic conditions and high unemployment have accounted for increased unemployment among apprentices. The rate varied, but reached a level of approximately 70 per cent of registered apprentices in March 1983.

**Third** and fourth year carpenter apprentices attended their in-school training in Yukon, with 11 apprentices completing Level III and 10 completing Level IV from January to March 1983. In addition, a 5 month Carpenter Apprentice Extended Training Course and a 6 week Heavy Equipment Mechanic Extended Training Course were held to assist 29 unemployed apprentices to continue their training in these trades.

**Due** to the limited facilities in Yukon and the smaller number of apprentices, most still obtain their in-school training outside of Yukon in British Columbia and Alberta.

A total of 33 apprentices completed their apprenticeship programs during the 1982-83 fiscal year.

From April 1982 to March 1983, 86 journeymen received certification in trades through the tradesmen's qualification route. These were in addition to the 33 apprentices who earned Journeyman Certification upon completion of their apprenticeship programs. Of the 119 journeymen who qualified for a Yukon Certificate of Qualification, 113 received an Interprovincial Standards Red Seal on their Certificates of Qualification.

A number of the journeymen received certification after attending Journeyman Upgrading courses. Over the last year, 90 trades-people participated in the following upgrading classes: Heavy Equipment Mechanic (two classes), Motor Vehicle Mechanic, Industrial Mechanic, Welder (two classes), and Carpentry. The Industrial Mechanic and one of the Welder classes were held at the Cyprus Anvil Mine Site (Faro), while the rest were delivered at the Yukon College.

Under the Canada/Yukon Occupational Training Agreement, training done in Yukon through the General Industrial Training (G.I.T.) and Critical Trades Skills Training (C.T.S.T.) programs are approved and monitored by the Territorial training consultants. In the 1982-83 year approximately 49 contracts, covering a diverse range of skills-development programs, were entered into by Yukon industries and businesses. The portion of the wages and training costs reimbursed by federal funding amounted to approximately \$216,000.

Post-secondary financial assistance is available through this Branch to qualified Yukon residents to pursue their studies. In 1982-83, 272 students received assistance.

In March 1982, Manpower Planning was amalgamated with Advanced Education to better co-ordinate labour market needs with skills training. This section provides policy development, research and planning support in the manpower area in Yukon. Current activities include joint planning through the Yukon/Canada Labour Market Needs Committee and involvement with intergovernmental/industry planning for Beaufort Sea Development.

Employment Development programs co-ordinated through Advanced Education and Manpower include the Yukon/Canada Employment Bridging Assistance Program, Canada/Yukon NEED Program and the Special Employment Assistance Program for Yukon students.

#### **Plans for 1983-84**

In March 1983, the Yukon Vocational and Technical Training Centre and Yukon Campus were amalgamated into Yukon College. This change will allow more programs to be offered in the near future.

New initiatives and program expansions include the introduction of Basic Literacy, additional B.T.S.D. classes, a Diploma program in Business Administration, Apprenticeship technical training in Carpentry (Level II), and Community Administration. To help Yukon residents obtain Beaufort Sea employment, Trades Adaptive training will be offered to adapt land based trade skills to the marine gas and oil industry.

## **Recreation Branch**

### *Major Responsibilities*

The Recreation Branch is responsible for providing community recreation services and assisting recreational, sports and artistic organizations and events in Yukon.

### *1982-83 Program Highlights*

Sixteen local authorities received over \$116 000 through the Recreation Assistance Program to assist community recreation programs and services.

Thirty Territorial sports, arts and special recreation groups were allotted over \$268 000 for leadership and skill training. Territorial sports, arts, and recreation programs and administration.

Approximately 350 athletes and artists participated in technical clinics funded by the Recreation Branch.

The 1983 Canada Games in Quebec saw 66 of Yukon's best athletes competing in cross country skiing, alpine skiing, boxing, figure skating, table tennis, gymnastics, badminton, judo, weight lifting, and curling.

The 1983 Yukon Games was re-organized to better meet community recreational needs. Over 400 athletes took part in these winter games held across Yukon.

The Yukon Arts Council with assistance from the Recreation Branch provided a successful season of performing arts on tour. Touring artists also provide well received workshops in various Yukon schools.

The major public review of Recreation Branch programs continued in 1982-83 with various public forums to discuss the Branch's Green Paper on the Development of Recreation, Sports and Arts in the 80's.

### **Goals & Objectives for 1983-84**

- To complete the Recreation Review process by drafting new legislation regulations and policies for:
  - Community Recreation
  - Territorial Sports Games & Fitness
  - Territorial Arts Development
- To assist and fund the 1984 Arctic Winter Games being held in Yellowknife, N.W.T.

### **Department of Consumer and Corporate Affairs**

#### **Responsibilities**

The Department is responsible for developing and promoting consumer awareness and the ability to evaluate goods and services in the marketplace; promoting an equitable and safe work environment in Yukon; developing and promoting fair trade standards and professional practices; and developing and promoting safe and orderly commercial and private motor vehicle transportation.

#### **Program Objectives**

##### **Consumer Services**

- to protect consumers and the professions through administration of licensing standards;
- to provide service to the business community and consumers by helping to resolve disputes, and educating both with respect to their obligations in the marketplace;
- to provide a consumer education program and information service to publicize consumer-oriented services available from the Government and other sources.

##### **Corporate Affairs**

- to facilitate business and commercial transactions through the registration of business and personal property security registries and through the regulation of trading in securities.

### **Transport Services**

- to protect the public through vehicle registration and driver licensing and testing to help ensure operators of motor vehicles have adequate knowledge and skill;
- to promote safe use of motor vehicles and highways;
- to provide administrative and technical support and advice to the Transport Public Utilities Board;
- to enforce commercial highway transportation regulations.

### **Labour Services**

- to develop, administer and enforce labour and occupational health and safety legislation and provide comprehensive education on these matters to labour and management.

### **Medical Profession**

- to safeguard the public by ensuring that medical practitioners in Yukon maintain acceptable professional standards.

### **Public Boards**

- to provide for the operation of Public Boards established pursuant to legislation.

### **Department of Health & Human Resources**

#### **Responsibilities**

The Department of Health and Human Resources is responsible for providing health and social programs and services to improve the health and well being of individuals, families and communities. The Department also funds community agencies under Government of Yukon Contributions Agreements, which are complementary to Human Resources programs and services. Within the Department, the Administrative, Budget and Financial Planning Unit, and the Policy, Planning and Evaluation Unit provide support services.

### **Child Welfare Branch**

#### **Responsibilities**

Legislation administered by this Branch includes the Child Welfare Ordinance, The Day Care Ordinance and the Juvenile Delinquents Act. Programs delivered include juvenile probation, family services, day care, residential facilities for youth, services for children in care, including adoptive homes, group homes, foster homes and out-of-Territory placements. The Branch is responsible for delivering all social services outside of Whitehorse.

#### **Review 1982-83**

In 1982-83, the Branch:

- reviewed the Child Welfare Ordinance and proposed a new Children's Act;
- prepared and planned for implementation of the new Young Offenders Act;
- developed child abuse protocols with schools and hospital; held training and public awareness sessions on child abuse;
- increased promotional and support activities for the Foster Parent Program.

#### **Plans for 1983-84**

The Branch plans to:

- carry out training and implementation activities for the new Young Offenders Act and for the Children's Act, when the latter becomes law;
- revise and update the Child Welfare Manual;
- develop volunteer and support programs;
- increase training for foster parents; and
- develop a Native social work position in the placement area.

### *Whitehorse Branch*

Legislation administered by this Branch includes the Social Assistance Act, Rehabilitation Services Act, Pioneer Utility Grant Act and the Territorial Supplemental Income Seniors Allowance.

Programs and services that the Branch delivers (or oversees the delivery of in a policy making capacity) include: Social Assistance; the Yukon Opportunity Plan; Services to Seniors; community development; Vocational Rehabilitation Services; Alcohol and Drug Services (counselling, treatment, prevention education, employee assistance programs and the Community Addiction Workers program); and Detoxification Services.

#### **Review 1982-83**

In 1982-83 the Branch's activities included:

- initial planning for alterations to Macaulay Lodge to provide better care for Yukon seniors;
- establishment of the Territorial Supplemental Income Seniors Allowance to provide extra income to qualified, low-income Yukon seniors;
- establishment of the Yukon Opportunities Plan to route employable Social Assistance clients back into the work force or the job readiness programs;
- improving the programs provided to disabled persons in four "Teaching Homes" in Whitehorse, through emphasizing life skills, educational vocational training and job preparation;
- setting up a detailed assessment procedure to identify the needs of and clarify the services required by disabled Yukon adults;
- providing capital grants to the Yukon Family Services Association, the Yukon Rehabilitation Society and crossroads to foster community-based Social Service Programs to families, children and special needs groups; and
- increased emphasis on preventive education activities in Alcohol and Drug Services.

#### **Plans for 1983-84**

Along with improving accountability for all programs, this Branch plans to:

- develop policy and plans for implementing community-based Home Care Programs for seniors throughout the Yukon, along with services to seniors in the areas of Nursing Care and Extended Care;
- review the Social Assistance Ordinance, regulations and policies;
- expand the operation of the Yukon Opportunities Plan and by developing training options;
- subject to the availability of funds, conduct a needs assessment of disabled persons in the Yukon; and
- improve Alcohol and Drug Treatment/prevention Services to communities outside of Whitehorse through further refinement of the Community Addiction Workers Program.

### *Health Services*

#### **Responsibilities**

This Branch administers legislation including the Yukon Health Care Insurance Plans and the Medical Travel Act, Cancer Diagnosis Act, and Mental Health Act. It delivers various programs such as the Pharmacare, Extended Health Care, Vital Statistics and Family Life Programs as well as the Speech Pathology and Audiology Programs.

#### **Review 1982-83**

In 1982-83, the Branch:

- introduced extended Health Care Benefits program for seniors, covering eye tests and glasses, hearing aids, medical-surgical supplies, most dental work and some aids such as walkers;
- relocated the Communication Disorders Clinic into new premises specially designed for assessment, diagnosis and treatment; and
- increased emphasis on health promotion and family planning through media and information resources.

#### **Plans 1983-84**

The Branch's plans include:

- developing and implementing a new Health Branch Computer System to improve management information and the administration of premiums, registrations, and claims;

- reviewing Territorial Mental Health programs and services;
- reducing the incidence and severity of communication disorders by providing early assessment, diagnosis and treatment for pre-school and grade school children; and
- restructuring the Branch to facilitate conversion to the computer system and improve registration and premium collection; and
- increasing departmental planning activities regarding the transfer of federal health care services to the Yukon government (in accordance with a Land Claims settlement).

### **Department of Municipal and Community Affairs**

The Department's mandate is to involve Yukoners in the decision-making process through the development of local government and to provide equality of services throughout Yukon by equitable distribution of the benefits of development.

### **Land Branch**

The Lands Branch administers and manages Yukon Government land, forest and quarry resources and makes available residential, commercial industrial and recreational land throughout Yukon.

During 1982-83, approximately 159 sale agreements were processed for individuals and builders. About 490 cottage lot lease holders have received agreements or titles to their lots. Approximately 240 applications were received for agricultural purposes within Yukon Government and federal land jurisdictions. Eight agreements have been signed with individuals and approximately 20 other applications were approved.

### *Protective Services Branch*

This Branch is responsible for administering several areas of legislation dealing with public safety. Included are fire protection, building inspections and the Yukon Ambulance Service.

## *Fire Section*

1982-83, 101 fires were reported. These resulted in property losses of \$1.4 million. Three fatalities and five injuries resulted. 90 per cent of the reported fires occurred in homes, and 52 per cent of the losses were covered by insurance.

Fire Inspectors carried out 28 property inspections and 9 in-depth investigations where arson was suspected.

Fire Safety presentations were made to 320 children in Yukon schools in this, the first year of this program.

## *Ambulance Section*

The Yukon Ambulance Service with ambulance stations located in 12 centres throughout Yukon responded to 1266 calls during the year.

Twenty-three First Aid courses were conducted for 306 participants. In addition, 32 people completed 2 Cardio-pulmonary Resuscitation courses.

## *Building Inspection Section*

1982-83, 284 building permits were issued for a total construction value of about \$14.4 million.

A large increase in the installation of food burning appliances resulted in a total of 2312 inspections being performed.

This year, 73 people passed examinations and were certified as either power engineers or pressure welders. Under this program the Branch carried out 52 inspections. It also carried out 36 electrical safety inspections.

## *Plans 1983-84*

During the 83-84 period, greater emphasis will be placed on public education on safety matters. For example, arrangements have been made to carry out a fire prevention program in various schools. The Branch expects that public awareness programs will increase over the next several years.

## *Assessment Services*

Assessors have re-assessed all property in Yukon, in accordance with the 1979 revised assessment base. Properties will be re-assessed annually and inspected every five years.

## *Municipal Services Branch*

The Branch:

- develops legislation, special programs, and procedures related to all aspects of municipal affairs and the provision of basic services in unorganized communities;
- administers capital and operation and maintenance grants and contributions to communities;
- assists municipal councils and Local Improvement District Boards in establishing procedures, budgeting, personnel management, preparation of by-laws and interpretation of legislation.

Under the new Municipal Finance Act effective April 1, 1983, Local Improvement Districts for the first time received operating and maintenance grants from the Yukon government on the same basis as municipalities. Further consideration was given during the year to amendments to the Municipal Act 1980, under which the present L.I.D.s are expected to gain municipal status.

Operation and maintenance grants to the three municipalities and four L.I.D.s during the year totalled just over \$2 million. A further \$240 000 was paid to the City of Whitehorse as a transit deficit grant, and cemetery maintenance and water delivery grants to municipalities totalled \$8 000.

Community roads, garbage dumps, and sewage treatment facilities were upgraded throughout Yukon. Building projects included completion of the Mayo Administration Building and the Carmacks Swimming Pool, a water truck garage at Ross River, and major upgrading of the Watson Lake Community Hall and Arena. A Bituminous Surface Treatment program in communities was commenced at Carmacks, and an excellent water supply well was developed at Old Crow during the year.

## *Municipal Engineering Branch*

The Branch:

- provides for design and contract preparation, administration and inspection of municipal utility projects carried out by the Yukon Government;
- advises the municipal authorities with respect to operation and maintenance of municipal utilities;
- reviews and approves designs for municipal utility improvements eligible for Yukon Government financing.

The Municipal Engineering Branch was transferred to the Department of Municipal and Community Affairs from the Department of Highways and Transportation in September of 1982. The Branch continues to be responsible for most of the projects involving design and construction of roads and water and sewer systems in Yukon communities. There were over 40 of these projects in 1982-83. In addition, the Branch offered assistance to these communities in operating and maintaining their municipal services.

## *Department of Economic Development and Intergovernmental Relations*

The Department of Economic Development and Intergovernmental Relations resulted from amalgamating the former Department of Intergovernmental Relations with the Economic Research and Planning and Special Programs Branches of the former Department of Tourism and Economic Development. The intent was to consolidate offices with major responsibilities both for economic development, and for relations with other governments, thus creating strong and capable teams that could more readily address the most significant current and future issues facing Yukon.

### **Responsibilities**

The Department of Economic Development and Intergovernmental Relations has three major areas of responsibility. First, it is responsible for co-ordinating the formulation, development and implementation of short-, medium- and long-term economic development strategies, plans and programs for Yukon's various regions and economic sectors. Second, the Department is responsible for providing a centralized research capability and establishing a comprehensive socio-economic data base to meet the needs of all Yukon Government departments and the public. Third, the Department is responsible for co-ordinating all policies and activities of the Government of Yukon with those of the federal and provincial governments. It also makes recommendations to the Executive Council on the creation, development and implementation of these policies and activities.

### **Special Programs Branch**

#### **Responsibilities**

The Special Programs Branch is responsible for developing, managing and implementing the Government's economic development and energy programs. The Branch currently operates three programs through cost-shared agreements with Canada, namely the Special Agriculture and Rural Development Agreement (special ARDA), the Conservation and Renewable Energy Demonstration Agreement (CREDA) and the Yukon Energy Conservation Incentive Program Agreement (ECIP). This Branch is also responsible for developing energy plans and policies for Yukon.

#### **Review 1982-83**

During the year nine projects were approved under the extended Special ARDA program. Eight were commercial undertakings and the remaining project was for primary producing and social adjustment activities. This project was funded and carried out through the Government of Yukon.

### **Economic Research and Planning Branch**

#### **Responsibilities**

The Economic Research and Planning Branch has responsibilities in five major areas, as follows:

- co-ordinating the formulation and implementation of short-, medium- and long-term economic strategies for Yukon;
- carrying out research and analysis of social and economic issues affecting economic development in Yukon, and formulating policy alternatives for these issues;
- formulating and implementing policies and programs to help the growth and development of industry and small business develop and grow in Yukon;
- collecting, analysing and distributing social, economic and statistical data on Yukon;
- providing an economic forecasting service; and
- providing support services such as technical advice on data development techniques and surveys as well as statistical and research services for other government departments.

The Branch also conducts regular surveys of Yukon's consumer prices, the labour force and real estate and housing rental markets, which are published in the free quarterly "Yukon Economic Review".

#### **Review 1982-83**

#### **Research and Planning**

The Branch carried out several major projects during the year, including the following:

- an Economic Development Strategy for Yukon;
- a comprehensive review of the social, economic and environmental impacts of the placer mining industry, and development of policy and position papers regarding the regulatory regime;
- a background paper for the Conference on the Yukon Economy held in July 1982;
- a comprehensive four-volume report on the effects of the recession on the Yukon economy and on Yukon Government revenues;
- a comprehensive Yukon Business Directory and audio-visual presentation on Yukon supplies and services in conjunction with the Yukon Chambers of Commerce;

- an "Input-Output Table" of the Yukon economy and a much improved and expanded Yukon Econometric Model as part of the Yukon River Basin Planning Study; and
- a Business Development Assistance Program to provide incentives for the development of small business in Yukon.

In addition, the Branch continued to conduct research on various aspects of non-renewable resource development and transportation. This Branch and DIAND jointly commissioned a study of the potential social and economic effects that the MacMillan Pass mineral development and the reconstruction of the North Canal Road could have on the community of Ross River. The Branch also actively participated in both the negotiation of a joint federal/territorial aid package for the Cyprus Anvil Mine, and two Task Forces set up by Federal/Provincial/Territorial Ministers of Mines to examine mining communities and the taxation of junior mining companies. It also took part in discussions with major energy companies exploring in the Beaufort Sea region regarding the employment of Yukoners and use of Yukon businesses.

An inventory of coal deposits and a review of the use of this resource were started. Finally, the Branch started work on an Economic Development Agreement and Subsidiary Agreements, to replace the expired Canada/Yukon General Development Agreement.

#### **Data Development and Dissemination**

During the year the Branch completed preliminary drafting of a Statistics Act. This Act will facilitate collecting statistical information about Yukon. Work also began on a Community Profile and on a Yukon Statistical Profile.

### **Plans for 1983-84**

The coal deposits inventory will be completed. It is also anticipated that the negotiations concerning the Economic Development Agreement and sub-agreements will be concluded. New projects include a detailed study of Yukon's transportation network to be carried out in co-operation with the Canadian Transport Commission; and the development of Economic accounts for Yukon, in co-operation with Statistics Canada. In addition, the Branch will be participating in a Data Analysis project under the Yukon River Basin Planning Study and will carry out other research projects on various aspects of economic development in Yukon. The Branch also expects to be involved in preparing the Yukon Government's submission to the Royal Commission on the Economic Union and Development Prospects for Canada.

### **Land Claims Secretariat**

The Land Claims Secretariat is responsible for promoting the settlement of native land claims and the development of responsible government in Yukon.

### **Review 1982-83**

The Secretariat actively participated in Yukon Indian Land Claims negotiations resulting in the signing of over 30 sub-agreements leading toward and Agreement in Principle. Substantial progress has been made on land selection for the 12 Bands. Land selection agreements were completed for five Bands and partial agreements for three others.

The COPE claim negotiations began under a new Federal negotiator after Par's delay. The Yukon Government participated as a full member of the negotiating team when issues affecting Northern Yukon arose at the table. It is expected that a final agreement could be completed by either late 1983, or early 1984.

The Land Claims Secretariat continued to play a role in preparing for the Yukon government's participation in constitutional conferences on aboriginal rights.

### **Plans for 1983-84**

The Land Claims Secretariat will continue to participate in Native land claim negotiations and COPE negotiations and will carry out more land claims and constitutional research.

### **Intergovernmental Relations**

#### **Responsibilities**

This Branch is responsible for intergovernmental relations and internal policy analysis. The Branch also co-ordinates all Yukon Government Alaska Highway Natural Gas Pipeline and Beaufort Sea activities, and is responsible for the Emergency Measures office.

#### **Review 1982-83**

During 1982-83, the Branch was involved in a wide range of issues, but emphasized matters affecting the Yukon economy and the development of programs to help alleviate high unemployment within the Territory. To this end, the Branch was responsible for co-ordinating the Interdepartmental Committee on Job Losses, which developed suggestions for a "Strategy for Recovery" involving job creation and retention programs using federal and territorial funding.

Emphasis was also placed on Beaufort Sea development, with the Branch co-ordinating a series of meetings with Dome, Gulf and Esso concerning business development and employment questions. These meetings resulted in a productive exchange of views and informed the industry about the business expertise and the skills available in Yukon.

In preparing for the eventual production of oil and gas in the Beaufort Sea region, the Yukon Government identified research projects needed to provide an adequate data base for making policy and regulatory decisions. These research projects were included in the federal-territorial Northern Oil and Gas Action Program. Work on several environmental and socio-economic studies funded through this Program also started in the last quarter of 1982-83. These studies were co-ordinated through Intergovernmental Relations.

Co-ordination of Yukon Government activities relating to the proposed Alaska Highway natural gas pipeline continued. This work included reviewing the final route and associated land use, including the reduction of the right-of-way.

The Branch continued to represent the Yukon Government on: the National Energy Supply Allocation Board; the Federal/Provincial/Territorial Consultative Committee on Government Regulation; the Shakhwak Review Committee; the Senior Policy Committee on Northern Development; and the National Environmental Emergency Team. It also represented the Government at several federal/provincial/territorial ministerial meetings.

The Branch continued to co-ordinate protocol for the Yukon Government. The highlight was the visit of H.R.H. The Princess Anne to Yukon in July. Other visitors included the Governor General, in connection with the 40th Anniversary of the Alaska Highway, and the annual Ambassadors' Tour of the North.

#### **Emergency Measures Co-ordinator**

This office monitored the forest fire situation in Yukon during the summer months but fortunately no major emergencies occurred. Liaison also took place with Emergency Planning Canada concerning the new federal civil emergency legislation and related issues.

### **Plans for 1983-84**

The Intergovernmental Relations Branch will continue with these activities in 1983-84.

#### **Ottawa Office**

The Ottawa office continues to act as a "special representative" for the Yukon Government in the national capital by attending intergovernmental, parliamentary and senate committee meetings, and through daily contact with federal government public servants.

The office also acts as a point of contact for anyone who wants information about Yukon.

In 1983-84 the office will continue with these activities.

## Justice

The Justice Department provides both legal advice and legal services to all Departments of the Government, and a variety of services to the public.

It administers the Supreme Court and the Territorial courts in Whitehorse; the circuit courts to the other communities and the Justice of the Peace Courts, located throughout Yukon.

The Department maintains the offices of Land Titles, the Public Administrator and Legal Aid.

Probation Services maintains offices in Whitehorse, Watson Lake and Mayo. Institutional Corrections runs the Whitehorse Correctional Centre.

Policing in Yukon is carried out by the RCMP under a cost sharing agreement with the federal government.

Native Special Constables and Native Courtworker services are also provided by agreement.

The Department is responsible for the development of Human Rights policy and the Women's Bureau.

## Department of Highways and Transportation

### Responsibilities

The Department maintains and upgrades the Yukon Highway System and expands it as necessitated by economic development. The Department also is responsible for maintaining, operating and improving Arctic "B" and "C" Airports to Transport Canada standards to provide safe air access to outlying communities.

### Review 1982-83

The name change from Highways & Public Works in 1981-82 to Highways & Transportation in 1982-83 reflects a government re-organization that included transferring the Public Works Branch and the Municipal Engineering Branch to other Government Departments. This change had little effect on the Department's annual expenditures.

The Department continued to operate a VHF radio communications system for all Yukon Government and federal government departments in Yukon. The department also administered the Northern Exploration Facilities Program.

## Highway Maintenance

The Yukon Highway System was maintained from 22 Highway Maintenance Camps located throughout Yukon. Of the 4 469 km of roads now maintained, 1 056 km are either paved or have a bituminous road surface. This is an increase of 269 km over the previous year.

A ferry was operated at Dawson City and a barge at Ross River to provide access by those communities to the Dawson-Boundary Road and the North Canol Road respectively.

## Highway Construction

The first section (13 km) of the Klondike Highway between the Alaska Highway and Carcross was reconstructed. Base and surface treatment 32 km in length was applied to the Klondike Highway south of Carmacks. This is the beginning of a long-term program to eliminate gravel surfaces on this highway.

The first of two sections of the Faro Access Road were reconstructed and a new program to improve other roads began. This program will improve roads outside the numbered highway system and provide service mainly to the Resource and Tourist industries.

A number of projects were completed on the Dempster Highway, including grade improvements to reduce winter maintenance. A temporary Bailey Bridge was replaced by a new bridge over the Blackstone River. Large drainage structures were also installed on this highway.

Extensive field engineering was carried out on the Dempster Highway to obtain information needed to establish an upgrading program for which Federal funding is expected. An experimental surface of shale and sandstone was tested on the Dempster Highway to determine the suitability of these materials for road surfacing.

## Airports

The Department maintained 10 Arctic "B" and "C" airports and 20 emergency airstrips. It also provided air communications and weather services at Oil Crow, Faro, Ross River and Teslin. The last two stations were added to the program during the year under review. The Arctic Airport program is financed by Transport Canada.

### Plans for 1983-84

The Department will continue the multi-year program to upgrade the Carcross Road section of the Klondike Highway with federal funding; start a major, multi-year program to upgrade the Dempster Highway between km 0 and km 125 with federal funding; continue the Bituminous Surface Treatment Program with emphasis on the Klondike Highway north of Carmacks; continue to upgrade "other roads" (not included in numbered highway system) to assist resource and tourism industries; and improve highway maintenance procedures in response to the increasing number of Bituminous Surface Treated roads.

## Public Service Commission

The Public Service Commission is the agent of the Yukon Government for all personnel matters related to the staff of the public service.

Two major issues dealt with during 1982-83 were the implementation of a nine reduced work schedule that schedules nine working days in each two-week period, and the Public Sector Compensation Restraint legislation. Exemptions to the work schedule were given where 24-hour services are provided, e.g., Corrections, Ambulance Service, Detox Centre, and the Youth Service Centre. Teachers were not affected by the reduced work schedule. Introduced as a cost saving measure, the schedule was in effect from August 19, 1982 to March 31, 1983.

In December 1982, legislation was passed governing a restraint program that would keep Yukon public sector compensation within the national guidelines established by the Government of Canada.

### *Recruitment and Labour Relations Branch*

This Branch is responsible for the recruitment, selecting and promoting public servants and for labour relation functions. These include interpreting contracts, handling grievance appeals and coordinating the collective bargaining process.

During the year, a two-year agreement was settled with the Yukon Teachers Association. Contract negotiations with the Yukon Public Service Alliance of Canada began in March. Joint consultation meetings continued on a regular basis with the Alliance.

Permanent appointments from outside the Public Service:	
from within Yukon	342
by transfers	34
Permanent in-service appointments:	
by promotion	35
by transfer	58
Casual appointments (including contracts):	1 176
Total appointments:	1 428

### *Compensation Branch*

The Compensation Branch is responsible for providing classification standards; position classification; development of salary plans, benefit packages and terms and conditions of service; costing of collective bargaining demands; and organizational analysis and establishment control.

### *Compensation*

Permanent Staff Establishment	1104.1
Teachers Staff Establishment	316.9
Total Staff Establishment <sup>1</sup>	421.0
Casual Person Years	109.2
Part Time Positions	63.0

### *Employee Records & Pension Branch*

This Branch administers employee documentation and personnel records and provides advice to employees on pensions and benefits.

A new computerized payroll package was implemented at the beginning of the year.

### *Training and Development*

During 1982-83, training and development was designated a distinct unit within the Commission.

The Unit provided training to meet departmental and individual employee training needs in the form of courses offered in Whitehorse, a tuition reimbursement program, educational leave and on-the-job training.

The Employee Assistance program was implemented and has received positive response from staff and management alike.

### *Plans for 1983-84*

The visibility of Training and Development activities will be raised. It is hoped that the Unit will provide more training that will allow for promotions and encourage more local recruitment.

Over the next year, the Commission intends to computerize many of its record-keeping functions.

All policies, Acts and Regulations will be reviewed to ensure compliance with the Charter of Rights and Freedoms and the Constitution.

### *Finance*

The Department of Finance helps to ensure that the Yukon Government's finances are well-planned, and that financial resources are properly utilized and controlled in a manner consistent with the priorities of the Government. The department is also responsible for:

- managing the Yukon Consolidated Revenue Fund;
- maintaining and developing official government accounting and financial systems and records;

- processing and payment of suppliers' accounts;
- processing and payment of government payroll;
- preparing and distributing Territorial accounts and other periodic financial statements and financial information; and
- collecting all taxes and revenues.

The Department provides financial advice and analytical support to the Management Board of Cabinet; is responsible for negotiating the annual operating grant for the Yukon with the Federal Government; presenting the main Estimates, territorial accounts and other periodic financial information to the Yukon Legislative Assembly; and controlling and monitoring the financial performance of departmental operations. It is also involved in formulating financial policies, procedures and controls and provides guidance and leadership in all financial areas of the government.

### *Tourism, Heritage and Cultural Resources*

#### *Departmental Responsibilities*

The Department of Tourism, Heritage and Cultural Resources is responsible for developing and managing Library and Archival services and heritage resources. It also manages and administers an extensive tourism marketing and development program aimed at promoting the growth of that industry.

#### *Tourism Marketing Branch*

The objectives of the Branch are to attract more visitors to Yukon by marketing Yukon as a desirable destination, extending the length of the tourism season and developing more outdoor and winter tourism. The Branch also works to increase the average length of stay of visitors.

In 1983, 365 000 visitors to Yukon spent an estimated \$51 million. In 1982, the second largest number of annual border crossings was recorded, surpassed only by figures for 1981.

In 1982-83, 67 per cent of visitors came from the United States, up 4 per cent. The number of Canadian visitors dropped by 2 per cent from 28 per cent to 26 per cent. Overseas markets accounted for 8 per cent of visitors.

Twenty-seven per cent of all visitors travelled to Yukon either by bus or car, and increase of 3 per cent over the previous year. Air traffic, however, decreased by 30 per cent.

In 1982, the Branch received more than 71 000 requests for Yukon travel information and sent that many copies of the travel guide, *Yukon - Canada's Great Frontier*. Another 129 000 guides were distributed through automobile associations, travel agents, tour operators, CGOT, hotels and travel information centres within and outside Yukon. The Branch also distributed 20 000 Yukon Travel Agents Manuals both to tour operators and airlines, and to persons making direct inquiries.

In 1982-83, people from nine countries visited the Territory, as well as 15 tour operators, 207 travel agents and 42 writers and TV film crew members.

The Yukon Co-operative Tourism Marketing Committee composed of representatives from industry and government continued as the central marketing co-ordination agency guiding the ongoing joint marketing program with the State of Alaska, travel agents promotions and overseas marketing.

#### **Plans for 1983-84**

The Branch plan to produce a 14½ minute 16 mm travel film about Yukon for worldwide distribution through Tourism Canada and the National Film Board offices. Ten 90-second documentary style film shorts will also be produced for television, publicizing the attractions in Yukon.

In addition, the Branch plans to increase its emphasis on publicizing the potential for outdoor adventure in four different regions of Yukon.

#### **CYTA Expenditures**

	Allocations	Expenditures	Balance
<i>Program I</i>			
Tourism Infrastructure	4 064 400	3 306 250	758 150
Tourism Incentives	1 095 700	958 200	137 500
Other	535 000	400 000	135 000
<i>Program II</i>			
Research and Planning	304 900	211 000	93 900
<b>Total</b>	<b>6 000 000</b>	<b>4 875 450</b>	<b>1 124 550</b>

#### **Tourism Planning and Development Branch**

The Branch is responsible for co-ordination planning within the tourism industry - specifically, developing tourism strategies and attractions and the infrastructure needed to support them.

The Branch is also responsible for implementing the Canada-Yukon Tourism Agreement (CYTA), a \$6 million, three-year tourism development program launched in February 1980. Yukon contributes up to \$900 000 to this joint program with the balance provided by the federal government.

The Branch is currently working on a future agreement and a new general Economic Development Agreement.

The construction and renovation work under the Canada-Yukon Agreement includes the following:

In Dawson:

- construction of new Downtown Hotel;
- expansion of Triple J Cabins Motel;
- construction of new Visitor Reception Centre with an historic design;
- construction of historic facades on twenty buildings;
- construction of pedestrian boardwalks throughout the downtown area;
- renovation/construction of Diamond Tooth Gertie's Gambling Casino.

In Whitehorse:

- restoration of Old Log Church historic attraction;
- renovation of Visitor Reception Centre;
- development of Guild Hall Society facilities.

Other Projects Include:

- assistance for a lunchtheatre attraction in Carcross;
- a new Visitor Reception Centre in Carcross;
- a new Visitor Reception Centre in Watson Lake; and
- financial assistance for three wilderness adventure tour companies.

The research and planning program has produced a number of reports and studies: the 1981 Yukon Tourism Industry Highlights Report; a 1982 Visitor Exit Survey; a Kluane Region Tourism Development Plan; a Wilderness/Adventure Travel Industry Analysis; and 1982 Coupon Conversion Market Research.

Branch programs, other than those included under CYTA, include placing "point of interest" signs along Yukon highways.

Objectives for 1983-84 include implementing a new Federal/Territorial tourism agreement and continuing a comprehensive highway sign development program that will incorporate private advertising.

### *Heritage and Cultural Resources Branch*

1982-83 represents the first full year of operation for this Branch, which was established in November 1981. Its broad mandate is to co-ordinate heritage policies and programs in order to create public understanding and appreciation of Yukon's heritage resources. Major areas of responsibility include: Administration of heritage policies and programs, including the Scientists and Explorers Act and Archaeological Sites Regulations; Historic Sites preservation, planning and development; Museums advisory and grants programs; and Art Gallery operation and curation of Yukon's permanent art collection.

Work has begun on preparing a comprehensive heritage policy. This work will continue into 1983-84. A total of 30 Scientists and Explorers and Archaeological Sites Regulations permits were issued for a variety of scientific projects conducted by non-resident researchers.

The Historic Sites activity continued on a number of projects funded under the Canada-Yukon Tourism Agreement. Stabilization work on a total of six structures was carried out at Fort Selkirk, Lower Laberge and Hootalinqua. Work continued to restore the exterior of the S.S. Tutshi and on the design and construction of an associated Visitor Information Centre at Carcross. An inventory of historic sites along the Yukon River from Whitehorse to Dawson City was conducted. During the winter, the Branch wrote texts for three interpretive brochures and produced 17 interpretive signs for the Yukon River. Reconstruction of the foundation of the Old Territorial Administration Building in Dawson City was completed in the Spring.

The Branch's Museums activity distributed a total of \$60 000 in Operations and Maintenance and Capital grants to six museums. \$4 000 was also provided to the Yukon Historical and Museums Association for travel assistance and to help in the production of a brochure.

The Art Gallery sponsored 12 art exhibitions in the Whitehorse Public Library, as well as a major exhibition of works from the Canada Council Art Bank shown in the MacBride Museum in Whitehorse. Major assistance was provided in producing "Points of View '82" and in holding a number of public art classes and workshops. The Permanent Art Collection was increased from three to ten works of art. These works are now on permanent display in the foyer of the Administration Building.

Primary objectives for 1983-84 include continued work on heritage policy; continued stabilization and development of Yukon River historic sites; and reconstruction of the foundation of the Yukon Sawmill in Dawson City. The Museums activity will be strengthened with the addition of a permanent staff position, to be recruited in the fall of 1983.

### *Yukon Archives*

Established under the Archives Act, the purpose of the Yukon Archives is to collect, preserve and make available the documentary heritage of Yukon and Yukoners. Material in all media is acquired through donation or purchase, catalogued and preserved in a fire-proof vault. It is made available to the public, through displays and the presentation of films and lectures around Yukon.

In 1982-83, more than 4 200 researchers used the collections at the Yukon Archives.

The Yukon Historical and Museums Association sponsored two major projects at the Archives. The first of these projects, a Summer Canada '82 employment grant, resulted in the documentation of over 400 collections. The second project resulted in a substantial decrease in the photograph processing backlog, the preparation of a detailed bibliography on the Whitehorse Copper Belt and the cataloguing of photograph collections.

A brief bibliography and small display were prepared as part of the 40th anniversary celebration of the building of the Alaska Highway. Films were shown to a variety of local organizations. Advice and assistance on establishing a small library was given to the R.C.M.P., the Department of Fisheries and Indian Affairs.

A total of 150 new collections were acquired this year. These included:

- Eugene & Gertrude (Powell) Fournier, ca. 1914-1917;
- Robert L. Dunlap, 1973-1981;
- Delphus Arthur Surprise, ca. 1942-1944;
- Bea McLeod, ca. 1957-1965;
- Yukon Consolidated Gold Corporation, 1899-1960;
- Emil Joseph Forrest, 1903-1960;
- Arctic Gold & Silver Mines Ltd., 1968-1969;
- Yukon, Department of Education, 1910-1979;
- Johannes Petersen, 1898-1903;
- Whitehorse Star, 1960-1969;
- Robert C.W. Ward, 1941-1958;
- Yukon Game Department, 1944-1977;
- Gordon I. Cameron, 1939-1962;
- Canada, Northern Affairs Program. Northwest Territories and Yukon Branch Records, 1898-1953;
- Arthur B. Thornthwaite, 1924-1933;
- Charles Coghlan, ca. 1919-1944; and
- Charles and May Good, 1912-1944.

Plans for 1983-84 include the development of subject access to primary (i.e., archival) collections; the preparation of a detailed system for finding items in the Whitehorse Copper Mines Ltd. Records; a display on early exploration in Yukon; and the co-ordination of a conservation workshop in the fall of 1983.

### *Library Services Branch*

Although distribution to public libraries and schools was down by 9 per cent, the Branch continued to fulfil its mandate to provide library services in Yukon by purchasing and processing 14 per cent more books than it did in 1981-82. Total public borrowing was 2 per cent lower than for last year, despite gains at public libraries in Dawson City, Haines Junction and Whitehorse.

The method for ordering books for Yukon schools was improved during the year. The position of Instructional Materials Co-ordinator was filled and the Branch supplied nearly 4 000 books to the new junior high school at Porter Creek in addition to those supplied to schools elsewhere in the Territory. In 1982-83, at the Whitehorse Public Library, staff handled some 80 per cent more reference questions and request for books not on the shelves than in the previous 12 month period.

Two vacancies for professional librarians are expected to be filled in 1983-84. A re-organization of Branch operations will take place. A legal collection for the Whitehorse Public Library is planned and development of joint school-public library services is expected to continue at Carmacks and Teslin.

### **Renewable Resources**

The Department's objectives are to plan, manage and develop Yukon's renewable resources for the optimum benefit of Yukon residents and visitors. Through its two Branches, the department meets these objectives by administering two cost-shared agreements: The Yukon River Basin Study and the Subsidiary Agreement on Renewable Resource Development.

#### *Resource Planning and Management Branch*

Land Use Planning is a major concern of the Department. An alternative management plan for the Ibex area was completed and the Land Use Planning Act was prepared. A draft of the Dempster Highway Plan was completed and the final report is expected in the summer of 1983.

Initial planning for a new system of campgrounds and trails began in the Tatchun/Frenchman Lake area. Plans were completed and construction began early in 1983 on the Pine Lake Campground. Planning for the expansion and upgrading of existing campgrounds is continuous.

The Branch completed a number of projects under Program I of the Renewable Resource Sub-agreement, including the final draft of the Southern Lake/Resource Maps project and Carmacks/Ross River Vegetation Mapping project. Preliminary results have been obtained from the Critical Sheep Wintering Area study in the Southern Lakes area and the Ecodistrict of the south eastern portion of Yukon.

Under the Yukon River Basin Study Agreement, streams and rivers were studied to determine what species of fish inhabit them, as well as to evaluate their potential to maintain fish populations. 70 streams were inventoried, and a number of maps are being prepared.

During the 1982 hunting season the Branch's laboratory examined the biological submissions of 65 black bears, 75 grizzly bears, 48 caribou, 206 moose, 264 sheep and 10 goats.

The Resource and Management Division of the Branch continued programs respecting preservation and control of big game, carnivores, fur bearers and birds of prey and waterfowl.

Representatives of the Branch also sit on a number of land use committees, boards and panels in a continuing effort to identify and resolve environmental concerns.

#### *Wildlife and Parks Services Branch*

This Branch is responsible for enforcing the Wildlife Act and Regulations, the Parks Act and Regulations, and the Pounds Act and the Brands Act. It selects and develops new campground locations.

In addition to providing funds for the usual campground development and rehabilitation programs, the Subsidiary Agreement allowed for several new campground projects, information kiosks and recreational road maintenance.

The Yukon River Stabilization Program continued with rehabilitation work at Fort Selkirk, Lower Laberge and Hootlinqua. Preparations for 1983-84 work were made at six historic sites on the Yukon River. A Visitor Information Centre was constructed in Carcross, with rehabilitation and stabilization work continuing on the S.S. Tutshi in conjunction with the Department of Tourism. Construction of the Watson Lake Campground was completed, and construction of new campgrounds at Haines Junction and Carcross started.

An Auxiliary Conservation Officer Program began in 1982. Training sessions were held in Whitehorse, Ross River, Mayo and Dawson City. A total of 77 trained auxiliaries have been hired. This Program will continue in 1983-84 because of the favourable results of a survey conducted by the Department.

A number of Regulations were changed. Most related to hunting laws concerning quotas and length of the hunting season.

Program III of the Subsidiary Agreement on Renewable Resources has been transferred from the Department of Education to this Department. Projects under this Program include Conservation Offices in Dawson, Watson Lake and Haines Junction, and completion of the swimming pool in Carmacks. All projects will be completed in the summer of 1983.

The Information and Education Section has produced a number of publications and films. Two video presentations have been particularly successful "A Resource to Treasure", concerning the value of Yukon's wildlife, and "Field Dressing of Moose", which has been distributed to conservation offices for local presentation. Along with several hunter and conservation education presentations, the publications "The Bear Facts" and "Big Game Animals of Yukon" were reprinted this year in response to public demand.

## Government Services

### Review of 1982-83

During the fiscal year, the Department assumed responsibility for the Public Works Branch. (The responsibility previously rested with the Department of Highways & Public Works.) This change created a new Branch within the Department of Government Services, under which the existing programs of Property Management & Safety, Security and E.M.O. were amalgamated.

The Records Services Branch, which was previously under the jurisdiction of the Department of Tourism, Heritage & Cultural Resources, was also transferred to Government Services and is now part of the Supply Services Branch, as an extension of the communications system.

Contract Administration was also transferred from Highway & Transportation to Supply Services. In conjunction with the Purchasing Section, Contract Administration provides assistance to all government departments and agencies in tendering and issuing of major contracts (construction, service contracts, etc.).

Responsibility for the Public Affairs Bureau no longer rests with this Department, as the Branch is now under the jurisdiction of the Executive Council Office.

### Administration Branch

The Branch provides central administrative support to the Department's three main Branches: Systems & Computing Services, Supply Services and Public Works.

Beginning with the 1983-84 fiscal year, a major function of the Administration Section will be to provide a program risk management for the Government, including general insurance coverage. As part of the program, the Branch will have government buildings and their contents appraised to reflect true market values.

### Systems & Computing Services Branch

The Branch provides a systems analysis and design service, as well as electronic information processing services to all government departments and agencies.

### Review 1982-83

During the 1982-83 fiscal year, the Branch developed and implemented the Personal Property Security Registration System. It also completed a client index system for the Department of Health & Human Resources and implemented a new Payroll Project. The Branch also opened a new Service Centre to train staff and give government departments more access to computing services.

### Plans for 1983-84

The Branch will concentrate on its office automation program and the establishment of new remote computing capabilities.

### Supply Services Branch

The Branch provides a pool of resources to all government departments and agencies to encourage greater efficiency and economy in areas such as purchasing, contract administration, capital asset control, transportation, communications, printing services and warehousing.

A major objective of the Branch is to ensure that Yukon businesses have an equal opportunity to supply goods and services to the Government.

### Review 1982-83

During the year, Records Services Section focused on a complete revision of Records Management Policies and Procedures.

### Plans for 1983-84

The Branch plans to continue reviewing policies and procedures, with particular emphasis on policies and regulations pertaining to contract administration.

### Public Works Branch

The Branch comprises four Sections:

1) *Building Maintenance* - this Section is responsible for maintaining all government owned buildings.

2) *Construction/Engineering* - this Section plans, designs, constructs and inspects all Capital building projects for the Government of Yukon.

3) *Property Management* - responsibilities include acquiring and allocating office accommodation for all government departments throughout Yukon and providing related services (janitorial, grounds maintenance, utilities).

4) *Safety, Security & E.M.O.* - key responsibility areas are safety and security programs for all government departments and employees as well as an Emergency Measures Organization for Yukon.

### Review 1983-84

Major renovations were carried out in the Administration Building during the year, creating private offices for the MLA's as well as a conference room complex and new office space for the Internal Auditor's staff. Space was provided for the Engineering Branches (Public Works, Municipal Engineering and Highway Construction) by relocating records storage to rented Warehouse space. Additional office space was acquired for the Administrative Branch of Tourism, Heritage & Cultural Resources. A new permanent Art Exhibit was created in the foyer of the Administration Building.

Major construction projects completed in 1982-83 included the Porter Creek Junior Secondary School in Whitehorse, the Eliza Van Bibber School in Pelly Crossing, the Chief Zzeh Gittlet School in Old Crow and a new Administration Building in Mayo.

### Plans for 1983-84

Major projects scheduled for 1983-84 include the Retrofit Program/Energy Conservation) and Asbestos Abatement Program for various Highway grader stations. Renovations are scheduled for three Whitehorse schools: Christ the King High School, George Jeckell Junior Secondary and Whitehorse Elementary. The Branch will be involved in various construction projects for other departments.

## Yukon Housing Corporation

As the Yukon Government's housing agency, the Yukon Housing Corporation's prime responsibility is to provide housing for persons and families unable to obtain adequate housing in the marketplace.

The Corporation develops and administers various low cost housing programs for Yukon families and senior citizens. In the city of Whitehorse these programs are managed by a housing authority. In the smaller rural communities, housing associations carry out the housing management duties.

Housing is made available and leased to Yukon Government employees under the Staff Housing Program.

The Corporation's 5-year program to reduce energy consumption in staff and community housing is in its 4th year of operation. This fiscal year, a total of 48 units were upgraded under the CHIP and COSP programs. An additional 24 units were upgraded under the federal government's off-oil program.

In the summer of 1982, major foundation work was completed on two units in Dawson as part of an ongoing program to upgrade the Corporation's housing units.

In late 1982 a contract to build a senior citizens four-plex was awarded. This structure will be located in Dawson and will be designed to complement the historic buildings of the community. Construction work should be completed in late summer 1983.

As the project manager for the Yukon Conservation Renewable Energy Demonstration Agreement Project, the Corporation will retrofit a number of public housing projects to lower heating costs. The major portion of the project will involve retrofit work for private Yukon senior homeowners and will test the ability of various retrofit systems to reduce energy consumption.

## Yukon Liquor Corporation

### Responsibilities

The Yukon Liquor Corporation regulates, imports, distributes and retails alcoholic beverages within the Yukon. It also issues, cancels, and suspends liquor licences, enforces the Liquor Act, carries out inspections and deals with all other matters relating to controlling the sale of liquor. Unlike government departments, the mandate for a Crown corporation is legislated, making the Corporation responsible to the legislature. The Auditor General of Canada audits the Yukon Liquor Corporation.

The Board of Directors, appointed by the Government, is the Corporation's legal entity. Board members are part-time appointees and reside in different parts of the Yukon (Mayo, Haines Junction, Watson Lake and Whitehorse). The Board of Directors has assumed all legislated responsibilities and is involved in corporate business activities, drafting by-laws and setting budget policies. As the Crown corporation is under the joint control of the Government and the Board of Directors, the Chief Executive Officer directs, supervises and controls the general direction of the Board on behalf of the Government. This arrangement allows for visible separation from day-to-day control by Government and frees the Board of Directors from political pressure, while allowing the Government to remain accountable to the public. The Minister responsible for the Corporation answers to the legislature for the corporate mandate received from that body and to the Government for matters involving major policies.

### Review 1982-83

#### Administration

Liquor Legislation was amended, and regulations were passed to allow draught beer to be sold in cocktail lounges. The amendments also allowed cocktail lounges and taverns to be used during off hours, enabling hotels to make maximum use of their facilities during tourist season. Legislation was also passed that either extended or restricted public drinking to areas within a municipality or Local Improvement District, according to the decisions of the municipal governments.

#### Licensing

The Corporation approved 13 applications for licences during the year. No existing licences were suspended. A total of 1 328 visits were made to licensed establishments and 653 liquor permits were issued to the public.

#### Accounting

Electronic stock control by means of Point of Sale cash registers continued to be introduced in Yukon. All stores and Central Warehouse will eventually use this system.

#### Operations

The Head Office and Central Warehouse are located in one building in the Marv area. A total of 43 staff members work at Head Office and operate the Central Warehouse and 6 liquor stores. Liquor stores are located at Whitehorse, Haines Junction, Dawson, Mayo, Faro and Watson Lake. The retail sales outlets of the Corporation function like a private retail enterprise. All liquor imported into the Yukon is received at the Central Warehouse for transfer to the six stores. As well, licensees in Whitehorse and highway lodges are served from the License Outlet Store within the Warehouse. Retail prices are identical in all liquor stores at the Central Warehouse. It is the government's policy (regulated) that licensees outside a 25 mile radius from a liquor store or warehouse receive prepaid shipments in order to help alleviate higher costs in isolated areas.

Canadian liquor products are ordered frequently throughout the year. Overseas products are ordered from more than 20 countries. These items are ordered in large quantities twice annually, with intermittent orders as required, in order to take full advantage of containerization at the European docks.

*Liquor Sales Throughout Yukon Including  
Surcharge*

	1982-83	1981-82
Spirits	\$ 6 101 352	\$ 6 717 395
Wine	2 117 637	2 226 722
Beer	6 826 466	6 720 368
Total	\$15 045 466	\$15 664 485

*Licensing and Inspection*

Liquor Licences Issued	1982-83	1981-82
Liquor Cocktail Lounge	46	42
Beer Tavern	9	10
Dining Room	39	39
Restaurant Beer and Wine	36	32
Liquor Off Premises	60	56
Beer Off Premises	31	31
Club Liquor	12	11
Beer Canteen	4	4
Special Liquor	6	5
Aircraft Liquor	2	2
Room Service Liquor	19	
Less Liquor	3	2
Total	267	252
Special Occasion Permits	519	500
Exception Permits	134	159
Total Permits Issued	653	659



# Annual Northern Expenditure Plan 1983-1984

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Expenditure Plan
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# The Concept of the Annual Northern Expenditure Plan

## Introduction

Federal departments and agencies and the governments of the Yukon and Northwest Territories are surveyed each year to obtain information regarding their recent and proposed annual expenditures on programs and activities in or for the two territories. In the aggregate, the expenditure data thus collected constitute the northern expenditure plans of the federal and territorial governments.

## Policy Framework for Northern Expenditure Planning

In 1971 the government of Canada approved a northern development policy that established seven national objectives for northern Canada. These objectives were designed as a policy framework for the formulation, co-ordination and implementation of all federal and territorial government programs concerned with northern Canada, and to provide a common basis for federal and territorial governments to plan and implement their northern programs. At the same time, they present a special challenge in joint planning and co-ordination among the three governments involved, given the multiplicity of departments and agencies through which each government discharges its responsibilities north of 60°. Accordingly the preparation of an annual northern expenditure plan was undertaken to facilitate a co-ordinated and balanced approach to allocation of the human and financial resources of government in relation to the government's northern objectives.

## Scope and Nature of the Data Survey

### *Geographical Area and Time Frame*

The terms north, northern and north of 60° refer to the Yukon and the Northwest Territories. Expenditures north of 60° relative to Arctic Quebec and Labrador are not included in the data.

Agencies\* were asked to provide data for a four-year period: planned expenditures for 1983-84, forecast expenditures (at the time of the survey) for 1982-83 and actual expenditure for 1981-82 and 1980-81. It is important to note that the data for 1983-84 are based on expenditure plans contained in the Main Estimates published by the federal and territorial governments for that year; as such, they represent spending plans that are subject to change in response to shifts in priorities.

### *Nature of Data Included in the Survey*

To ensure maximum reliability in the data, agencies were asked to report only direct northern expenditures. Direct expenditures are (a) those that take place physically north of 60°; (b) those made to achieve departmental or program objectives exclusively for the North; or (c) those that contribute to northern objectives or involve the North in a national program, provided that the northern component of the expenditure can realistically be identified.

The annual northern expenditure plan includes territorial government expenditures under hospital and medical care insurance plans as well as federal government expenditures for providing health services in the North. A portion of the federal expenditures is financed through amounts received from the territorial insurance plans and, as such, there is some overlap in the data.

It should be noted that an element of judgement had to be applied in making the allocation of expenditures by northern objective. By its nature, this data category is subjective. For this reason, agencies surveyed were urged to seek advice from senior-level program managers to obtain the best judgement possible in these areas.

## Exclusions from the Survey Data

While the annual northern expenditure plan represents the most comprehensive data available on government spending in the North some federal agencies have been excluded from the survey even though they may operate northern-related programs. This is because data on indirect expenditures – that is, those which may contribute to northern objectives, but which have a primary thrust directed elsewhere and a northern component which cannot firmly and realistically be identified – are not included in the survey.

The expenditures of certain agencies whose operations are considered to be "special items" are excluded from the data tables. These special items include (a) forces of the Department of National Defence assigned to the defence of the North but stationed in southern Canada (a relatively high expenditure); (b) payments to agencies whose operations are of a quasi-commercial nature, namely to the Northern Transportation Company Limited by Transport Canada and to the Northern Canada Power Commission by the Department of Indian and Northern Affairs (loans for capital expenditure and advances for working capital); and (c) activities reported as long-range research (because the application of research results is expected to be at least two years away).

Information on the expenditures and operations of these agencies is available in their annual reports.

\*The term agency (when not otherwise modified) includes federal government departments, agencies and Crown corporations, and the governments of the two territories.

### *Adjustments for Inter-agency Transfers*

An inter-agency transfer takes place when funds are provided by one reporting agency to another without the recipient agency providing any goods or services to be used or consumed by the agency providing the funds. The recipient agency is thus free to administer the disposition of funds for their intended purpose. The most common forms of such inter-agency transfers are grants, contributions or loans.

The annual northern expenditure plan is designed to indicate northern expenditures by the agency that has legal responsibility for managing them. This means that transfers from one agency to another appear as the expenditure of the agency that ultimately disburses the funds.

### *Adjustments for Inter-agency Sales and Purchases*

Limitations in financial accounting systems make a certain amount of double counting unavoidable. Such double accounting occurs when one agency purchases goods or services from another agency and includes the purchase cost in its reported expenditures while, at the same time, the selling agency reports the cost of providing the goods or services as part of its expenditures.

Since the purchasing agency obtains the goods or services in order to carry out its programs and to promote certain northern objectives, the cost should be included in its expenditures by northern objective, and economic function. However, since the selling agency actually administers the expenditure in providing the goods or services, it is most appropriate that the cost be included as part of its reported expenditures by object of expenditure.

In line with this approach, sales to other agencies were deducted from the selling agency's gross expenditures in compiling the tables showing allocations by northern objective, and economic function.

### *Adjustments to Data Previously Reported*

For a number of reasons, data for the years prior to 1982/83 may differ from the data in previous annual northern expenditure plans. Planned data for a given year are derived from the Main Estimates, which are spending plans subject to change because of shifts in priorities. Planned data become forecast data the following year and are revised up to the time of the survey. Forecast data become actual data the following year, and in so doing, may change. In addition, some actual and forecast figures are later adjusted for errors, omissions, or agency reorganizations identified since the compilation of the previous year's report.

### **Interaction of Northern Objectives and Agency Program Objectives**

Reference has been made to the value of the annual northern expenditure plan in fostering greater cohesion in northern expenditure planning. The main focus of the plan, of course, is on those activities which contribute to the achievement of the national objectives for northern Canada.

The objectives of governments, however, are multi-faceted, diverse and inter-related. For example, many federal agencies whose activities support established northern objectives have responsibilities for meeting national or program objectives which are distinct from the national objectives for the North. In such cases, flexibility has to be applied in meeting non-northern objectives independent of northern concerns. It is recognized, however, that where the national purpose being served by a given agency or program must take precedence over the implications for northern objectives, the manner in which expenditures are executed may often be modified to enhance achievement of northern objectives without sacrifice to the other purposes being served.

# Total Northern Spending

The federal and territorial governments report total planned expenditures of \$1,267.5 million for 1983/84 – an increase of \$11.5 million or 9.6% over a recent forecast of total 1982/83 spending.



The examination of the 1983/84 expenditure plan and trends in northern spending since 1973/74, within the various data categories covered in this summary deals with the aggregate ANEP data *excluding* special items (e.g. DND's southern Canada forces available for defence of the North).

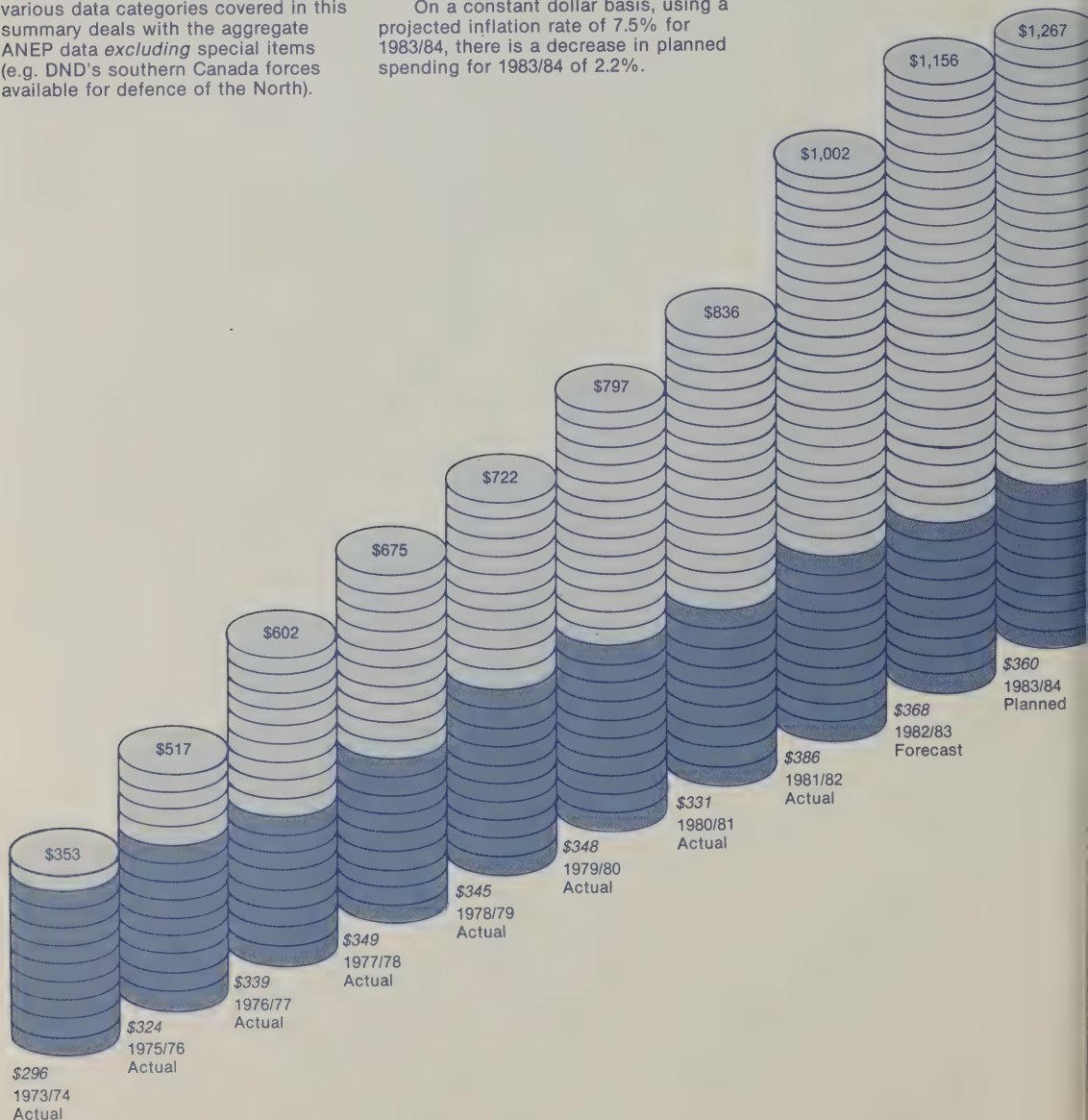
The graphic below indicates the trend in annual northern expenditures since 1973/74, showing the percentage change from year to year. The figures in italics provide the same information on a deflated basis in constant 1971 dollars.

The increase for 1983/84 on a *plan-to-plan* basis is 11.8%.

On a constant dollar basis, using a projected inflation rate of 7.5% for 1983/84, there is a decrease in planned spending for 1983/84 of 2.2%.

**Total Northern Spending (\$ millions)**  
1973/74 to 1983/84

Current Dollars:   
Constant Dollars: 



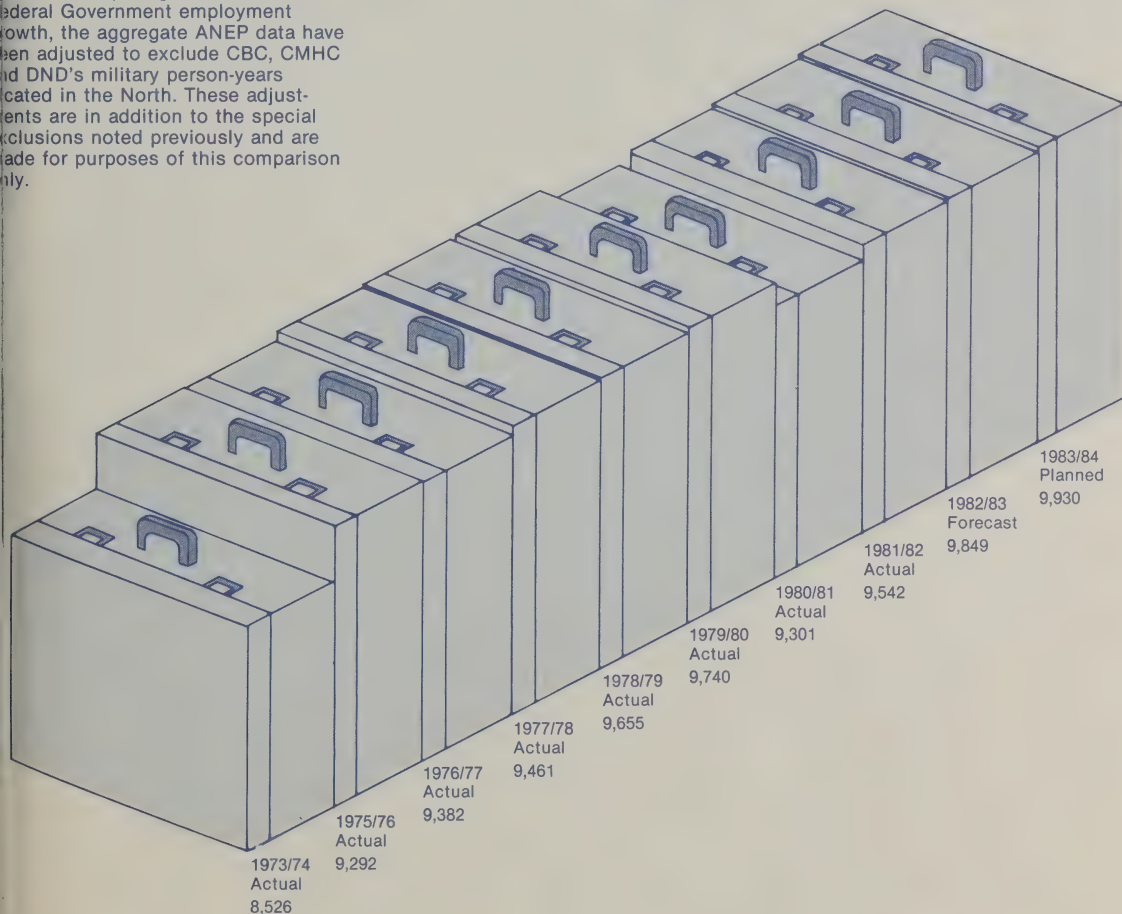
# Total Northern Employment

The federal and territorial governments plan to utilize 9,930 person-years in 1983/84 with respect to northern-related programs and activities — an increase of 81 person-years or 0.8% from a recent forecast of manpower utilization for 1982/83.

Total Federal Government employment comprises the personnel resources of departments and agencies which are subject to Treasury board control, excluding proprietary crown corporations and military person-years. Consequently, for purposes of comparing ANEP and total Federal Government employment growth, the aggregate ANEP data have been adjusted to exclude CBC, CMHC and DND's military person-years located in the North. These adjustments are in addition to the special exclusions noted previously and are made for purposes of this comparison only.

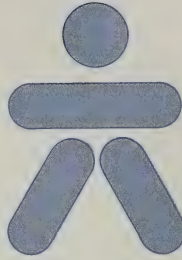
The person-years reported for special items which are excluded from the aggregate employment data pertain to DND's southern Canada forces and various Long-Range Research activities.

The employment levels associated with NCPC and NTCL are *not* reported in the ANEP as special items or otherwise. See Appendices I and II for information in this regard.

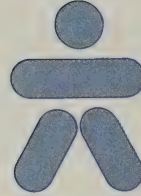


# Employment by Agency

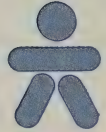
The following chart illustrates the distribution of the total 1983/84 planned employment level between the federal and territorial governments and shows how the federal share is divided among the major federal agencies.



Federal Government  
4,938



Government of the Northwest Territories  
3,479



Government of the Yukon Territory  
1,513

**Total Employment:** 9,930

## Planned Employment (Person-Years) for 1983/84 by Level of Government and Major Federal Agency

The agency manpower levels reported for 1973/74 and 1980/81 to 1983/84, along with the distribution of total employment in each year, are shown in the table below. Figures represent actual utilization for 1973/74, 1980/81 and 1981/82, a recent forecast for 1982/83 and the planned or authorized person-years for 1983/84.



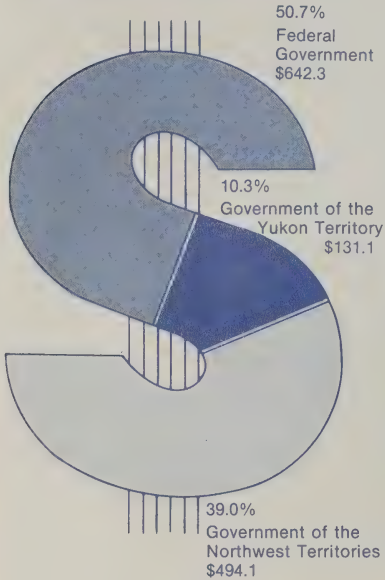
**Trend in Employment (Person-Years)  
and Percentage Distribution (%) by  
Agency**

Agency	1973/74		1980/81		1981/82		1982/83		1983/84	
	Actual		Actual		Actual		Forecast		Planned	
	#	%	#	%	#	%	#	%	#	%
Defence	995	22.2	769	16.2	859	17.7	841	16.9	913	18.5
DIAND	906	20.2	827	17.5	882	18.1	843	16.9	705	14.3
Health & Welfare	780	17.4	799	16.9	845	17.4	879	17.6	830	16.8
Transport	407	9.1	422	8.9	444	9.1	452	9.1	451	9.1
Environment	397	8.8	499	10.5	455	9.4	457	9.2	481	9.7
CMR	259	5.8	372	7.9	384	7.9	404	8.1	413	8.4
MR	210	4.7	204	4.3	177	3.6	168	3.4	165	3.3
Public Works	170	3.8	178	3.8	171	3.5	168	3.4	168	3.4
Post Office	106	2.3	111	2.3	112	2.3	116	2.3	118	2.4
Fisheries & Oceans	94	2.1	76	1.6	84	1.7	120	2.4	125	2.5
BC	83	1.8	184	3.9	179	3.7	236	4.7	254	5.1
EIC	39	0.9	125	2.6	114	2.3	128	2.6	143	2.9
SC	-	-	87	1.8	83	1.7	75	1.5	82	1.7
Revenue	16	0.4	13	0.3	15	0.3	15	0.3	15	0.3
Communications	10	0.2	12	0.2	11	0.2	12	0.2	14	0.3
Justice	8	0.2	17	0.4	17	0.3	19	0.4	19	0.4
MHC	5	0.1	15	0.3	16	0.3	14	0.3	16	0.3
REE	-	-	6	0.1	6	0.1	8	0.2	8	0.2
Museums	-	-	8	0.2	8	0.2	10	0.2	8	0.2
or Pipeline Agency	-	-	4	0.1	4	0.1	7	0.1	4	0.1
Labour	-	-	2	0.1	2	0.1	2	0.1	2	0.1
Veterans' Affairs	-	-	-	-	-	-	-	-	-	-
Finance	-	-	1	0.1	-	-	-	-	-	-
ed Judicial Affairs	-	-	-	-	-	-	-	-	-	-
ec of State	-	-	-	-	-	-	4	0.1	4	0.1
<b>Total</b>	<b>4,485</b>	<b>100.0</b>	<b>4,731</b>	<b>100.0</b>	<b>4,868</b>	<b>100.0</b>	<b>4,978</b>	<b>100.0</b>	<b>4,938</b>	<b>100.0</b>
<b>Federal</b>	<b>4,485</b>	<b>52.6</b>	<b>4,731</b>	<b>50.9</b>	<b>4,868</b>	<b>51.0</b>	<b>4,978</b>	<b>50.5</b>	<b>4,938</b>	<b>49.7</b>
<b>WTG</b>	<b>2,803</b>	<b>32.9</b>	<b>3,070</b>	<b>33.0</b>	<b>3,163</b>	<b>33.2</b>	<b>3,358</b>	<b>34.1</b>	<b>3,479</b>	<b>35.1</b>
<b>TG</b>	<b>1,238</b>	<b>14.5</b>	<b>1,500</b>	<b>16.1</b>	<b>1,511</b>	<b>15.8</b>	<b>1,513</b>	<b>15.4</b>	<b>1,513</b>	<b>15.2</b>
<b>Total</b>	<b>8,526</b>	<b>100.0</b>	<b>9,301</b>	<b>100.0</b>	<b>9,542</b>	<b>100.0</b>	<b>9,849</b>	<b>100.0</b>	<b>9,930</b>	<b>100.0</b>

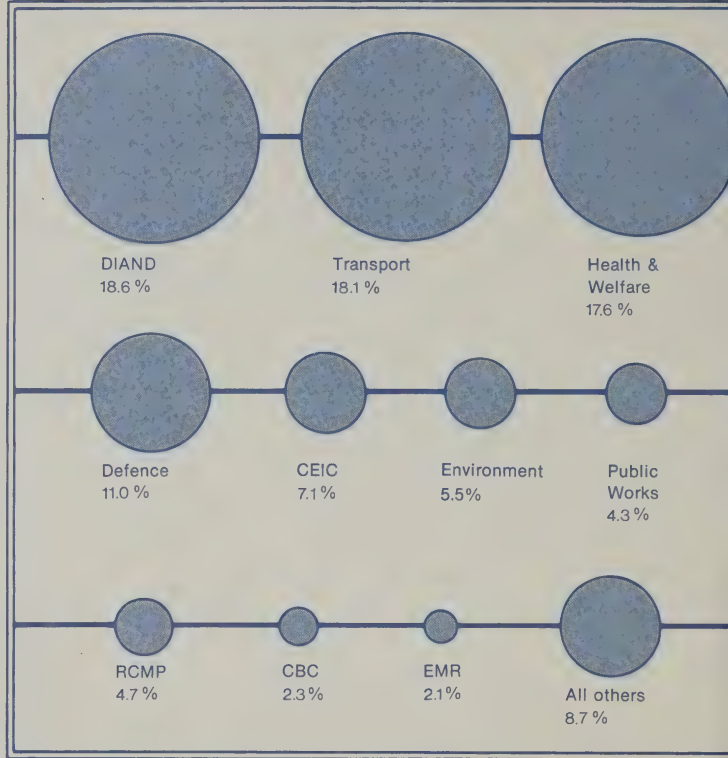
# Expenditure by Spending Agency

The chart below displays the federal and territorial governments' shares of the total \$1,267.5 million planned for 1983/84 and shows how the federal share is distributed among the major federal agencies.

**Total Spending: \$1,267.5**



**Planned Expenditure (\$ millions) for  
1983/84 by Level of Government and  
Major Federal Agency**



**Federal Spending: \$642.3**

The following table shows the trend in expenditures by reporting agency and government for 1980/81 to 1983/84 and enables comparison with the base year (1973/74). The figures in italics represent the percentage distribution of the totals. All expenditures are net of transfers, sales and purchases between governments and agencies and are reported according to the agency having the final responsibility for administering the funds.

**Trend in Expenditure (\$ millions) and  
Percentage Distribution (%) by  
Sponsoring Agency**

Agency	1973/74 Actual		1980/81 Actual		1981/82 Actual		1982/83 Forecast		1983/84 Planned	
	\$	%	\$	%	\$	%	\$	%	\$	%
Transport	67.3	34.1	101.4	24.8	106.5	21.7	117.7	20.3	119.8	18.6
DIAND	26.8	13.6	57.6	14.1	81.4	16.6	105.9	18.2	116.3	18.1
Health & Welfare	23.1	11.7	63.2	15.5	77.5	15.8	97.1	16.7	112.9	17.6
Defence	20.2	10.3	41.5	10.1	52.0	10.6	58.7	10.1	71.0	11.0
Public Works	13.0	6.6	21.6	5.3	29.2	5.9	25.8	4.3	27.5	4.3
Environment	10.2	5.2	26.7	6.5	32.6	6.7	33.2	5.7	35.4	5.5
CEIC	8.5	4.3	20.2	4.9	24.7	5.0	40.9	7.0	45.8	7.1
ICMP	6.8	3.4	22.7	5.5	27.9	5.7	31.2	5.4	30.6	4.7
IMR	6.4	3.3	13.4	3.3	13.4	2.7	12.9	2.2	13.7	2.1
IBC	3.3	1.7	11.7	2.9	11.4	2.3	13.6	2.3	14.4	2.3
Post Office	3.3	1.7	8.2	2.0	8.6	1.8	10.4	1.8	12.6	2.0
FREE	-	-	4.7	1.1	5.7	1.2	8.1	1.4	8.1	1.2
Fisheries & Oceans	2.7	1.4	3.3	0.8	5.1	1.0	7.0	1.2	7.8	1.2
Sec State	1.9	0.9	3.2	0.8	4.7	0.9	5.5	0.9	5.7	0.7
Finance	1.0	0.5	1.4	0.3	-	-	-	-	-	-
Communications	0.6	0.3	0.8	0.2	0.8	0.2	0.8	0.1	0.8	0.1
IMHC	0.5	0.2	2.0	0.5	2.6	0.5	5.7	1.0	12.3	1.9
ISC	-	-	2.4	0.6	2.3	0.5	2.9	0.5	3.3	0.5
Revenue	0.5	0.2	0.7	0.1	0.9	0.2	0.9	0.3	1.4	0.2
Veterans' Affairs	0.3	0.2	0.5	0.1	0.5	0.1	0.5	0.1	0.6	0.1
Justice	0.2	0.1	0.7	0.2	0.9	0.2	1.1	0.2	1.2	0.2
For Pipeline Agency	-	-	0.4	0.1	0.5	0.1	0.7	0.1	0.3	0.1
Labour	0.2	0.1	0.4	0.1	0.4	0.1	0.5	0.1	0.5	0.1
Museums	0.2	0.1	0.3	0.1	0.3	0.1	0.4	0.1	0.3	0.1
Ind Judicial Affairs	0.1	0.1	0.2	0.1	0.2	0.1	0.2	0.0	0.2	0.1
<b>Total Federal</b>	<b>197.1</b>	<b>100.0</b>	<b>409.1</b>	<b>100.0</b>	<b>490.1</b>	<b>100.0</b>	<b>580.7</b>	<b>100.0</b>	<b>642.3</b>	<b>100.0</b>
Federal	197.1	55.8	409.1	48.9	490.1	48.9	580.7	50.2	642.3	50.7
IWTG	115.4	32.7	314.2	37.6	385.0	38.4	440.4	38.1	494.1	39.0
TG	40.7	11.5	112.8	13.5	127.2	12.7	135.0	11.7	131.1	10.3
<b>total</b>	<b>353.2</b>	<b>100.0</b>	<b>836.1</b>	<b>100.0</b>	<b>1,002.3</b>	<b>100.0</b>	<b>1,156.1</b>	<b>100.0</b>	<b>1,267.5</b>	<b>100.0</b>

# Expenditure by Northern Objective

Expenditure data by Northern Objective are based on the informed judgments of reporting agencies. Also included are amounts which are considered to fall under the category of Administration and Support and which are not, therefore, allocated to specific objectives.

Following is a brief description of the National Objectives for Northern Canada approved by the Federal Government in 1971:

1 *Quality of Life* - To provide for a higher standard of living, quality of life, and equality of opportunity for Northern residents by methods which are compatible with their own preferences and aspirations.

2 *Economic Growth* - To encourage viable economic development within the regions of the Northern Territories so as to realize their potential contribution to the national economy and the material well-being of Canadians.

3 *Sovereignty and Security* - To maintain Canadian sovereignty and security in the North.

4 *Protection of Environment* - To maintain and enhance the Northern environment with due consideration to economic and social development.

5 *Evolution of Government* - To further the evolution of self-government in the Northern Territories.

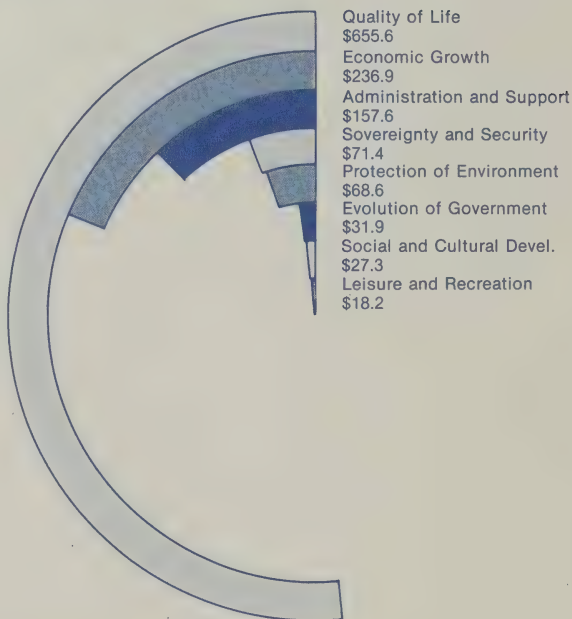
6 *Social and Cultural Development* - To realize the potential contribution of the Northern Territories to the social and cultural development of Canada.

7 *Leisure and Recreation* - To develop fully the leisure and recreational opportunities in the Northern Territories.

The chart below shows how the total planned expenditures for 1983/84 are distributed among the Northern Objectives, based on the allocations reported for each ANEP activity.

## Planned Expenditure (\$ millions) for 1983/84 by Northern Objective

Total Spending: \$1,267.5



Quality of Life	\$655.6
Economic Growth	\$236.9
Administration and Support	\$157.6
Sovereignty and Security	\$71.4
Protection of Environment	\$68.6
Evolution of Government	\$31.9
Social and Cultural Devel.	\$27.3
Leisure and Recreation	\$18.2

The category *Administration and Support* includes activities which contribute to the Northern Objectives by supporting other activities which contribute to these objectives (construction and maintenance of government buildings, financial and personnel services, etc.). In accordance with the ANEP survey methodology, these expenditures are identified separately rather than arbitrarily pro-rated among the other activities.

The following table indicates the overall dollar and percentage distribution of total expenditures among the Northern Objectives for various years. Trends in expenditure distributions over the ten-year period are indicated graphically below.



The following table provides the dollar and percentage allocations to the Northern Objectives for each of the Federal, NWT and YT governments. The objectives are in descending order based on the 1983/84 planned allocations of each government.

As noted previously, Administration and Support expenditures generally support more than one ANEP activity. For this reason they are identified separately, rather than arbitrarily pro-rated to other activities. The extent to which expenditures are allocated to this category depends largely on the

accounting systems and organizational structures of individual reporting agencies. As such, the data do not provide a valid basis for making inter-agency comparisons of Administration and Support expenditures.

**Trend in Expenditure (\$ millions) and Percentage Distribution (%) by Northern Objective**

Northern Objective	1973/74 Actual		1980/81 Actual		1981/82 Actual		1982/83 Forecast		1983/84 Planned	
	\$	%	\$	%	\$	%	\$	%	\$	%
<b>Federal:</b>										
Quality of Life	62.8	31.9	145.9	35.7	181.1	36.9	227.1	39.1	277.6	43.2
Economic Growth	66.4	33.7	107.4	26.2	131.6	26.9	159.6	27.5	172.4	26.8
Sovereignty and Security	24.9	12.6	55.5	13.6	63.8	13.0	74.5	12.8	71.4	11.1
Protection of Environment	18.6	9.5	47.8	11.7	53.5	10.9	57.6	9.9	58.9	9.2
Admin and Support	16.5	8.3	23.1	5.7	29.4	6.0	28.0	4.8	24.8	3.8
Social and Cultural Development	4.5	2.3	18.6	4.6	20.1	4.1	22.9	3.9	24.9	3.8
Evolution of Government	2.1	1.1	4.4	1.1	3.2	0.7	3.9	0.7	4.1	0.6
Leisure and Recreation	1.3	0.6	6.0	1.4	7.0	1.4	6.9	1.2	8.1	1.3
<b>Total Federal</b>	<b>197.1</b>	<b>100.0</b>	<b>409.0</b>	<b>100.0</b>	<b>490.0</b>	<b>100.0</b>	<b>580.7</b>	<b>100.0</b>	<b>642.3</b>	<b>100.0</b>
<b>NWTG:</b>										
Quality of Life	70.0	60.6	188.0	59.8	234.0	60.8	273.6	62.1	309.8	62.1
Admin and Support	29.9	25.9	85.1	27.1	97.4	25.3	107.7	24.4	116.4	23.6
Economic Growth	8.2	7.1	26.1	8.3	33.7	8.8	37.3	8.5	41.3	8.3
Evolution of Government	4.1	3.6	6.9	2.2	8.6	2.2	9.3	2.1	9.9	2.0
Leisure and Recreation	1.8	1.6	3.4	1.1	4.9	1.3	5.4	1.2	8.5	1.7
Protection of Environment	1.2	1.0	3.8	1.2	4.7	1.2	5.3	1.2	6.3	1.3
Social and Cultural Development	0.2	0.2	0.9	0.3	1.4	0.4	1.6	0.4	1.9	0.4
<b>Total NWTG</b>	<b>115.4</b>	<b>100.0</b>	<b>314.2</b>	<b>100.0</b>	<b>385.0</b>	<b>100.0</b>	<b>440.3</b>	<b>100.0</b>	<b>494.1</b>	<b>100.0</b>
<b>YTG:</b>										
Quality of Life	20.0	49.0	58.2	51.6	70.1	55.1	73.8	54.7	68.2	52.0
Economic Growth	11.6	28.6	19.6	17.4	21.1	16.6	23.9	17.8	23.3	17.8
Admin and Support	5.1	12.6	11.5	10.2	14.7	11.6	16.9	12.5	16.4	12.5
Evolution of Government	3.0	7.5	18.0	16.0	15.4	12.1	14.8	10.9	17.9	13.7
Leisure and Recreation	0.5	1.2	1.6	1.5	1.5	1.2	1.5	1.1	1.5	1.2
Protection of Environment	0.3	0.7	3.3	2.9	3.6	2.9	3.5	2.6	3.3	2.5
Social and Cultural Development	0.2	0.4	0.5	0.4	0.4	0.4	0.4	0.3	0.4	0.3
<b>Total YTG</b>	<b>40.7</b>	<b>100.0</b>	<b>112.8</b>	<b>100.0</b>	<b>127.2</b>	<b>100.0</b>	<b>134.9</b>	<b>100.0</b>	<b>131.1</b>	<b>100.0</b>

# Expenditure by Economic Function

Each ANEP activity is allocated to one of thirteen Economic Functions. However, certain activities (e.g. long range research) are treated as special items and are excluded from the chart and table. The distribution of the total expenditures planned for 1983/84 among the twelve other Economic Functions is displayed in the chart below.

## Planned Expenditure (\$ millions) for 1983/84 by Economic Function

Total Spending: \$1,267.5

General Government Services \$264.1

Transportation \$197.1

Welfare \$193.4



Health \$149.9

Education \$122.4

Economic Development (Other) \$86.2

Local Government \$69.0

Defence \$61.3

Economic Development (Human) \$33.8

Other:

2.9% Culture & Recreation \$37.1

2.2% Communications \$27.8

2.1% Short Range Research \$25.1

## Trend in Expenditure (\$ millions) and Percentage Distribution (%) by Economic Function

Economic Function	1973/74 Actual		1980/81 Actual		1981/82 Actual		1982/83 Forecast		1983/84 Planned	
	\$	%	\$	%	\$	%	\$	%	\$	%
Total Spending	353.2	100.0	836.1	100.0	1,002.3	100.0	1,156.1	100.0	1,267.5	100.0
General Gov't Services	78.8	22.3	198.3	23.7	235.6	23.5	253.6	21.9	264.1	20.8
Transportation	75.4	21.4	118.3	14.1	147.9	14.8	175.6	15.2	197.1	15.5
Welfare	39.0	11.0	105.9	12.7	126.0	12.6	160.1	13.8	193.4	15.3
Education	41.4	11.7	88.4	10.6	109.5	10.9	125.3	10.8	122.4	9.6
Health	26.8	7.6	85.5	10.2	104.7	10.4	128.3	11.1	149.9	11.8
Economic Devel (Other)	23.7	6.7	68.5	8.2	76.5	7.7	88.7	7.7	86.2	6.8
Local Government	15.8	4.5	50.4	6.0	62.7	6.3	65.4	5.7	69.0	5.5
Defence	13.9	3.9	36.2	4.3	41.6	4.2	49.5	4.3	61.3	4.8
Economic Devel (Human)	6.9	1.9	22.8	2.8	26.4	2.6	33.9	2.9	33.8	2.7
Communications	7.3	2.1	20.7	2.5	20.8	2.1	24.8	2.1	27.8	2.2
Culture and Recreation	6.5	1.9	23.3	2.8	29.4	2.8	27.9	2.4	37.1	2.9
Short-Range Research	17.7	5.0	17.7	2.1	21.0	2.1	23.9	2.1	25.1	2.1

# Appendix I

## Northern Canada Power Commission

The following information has been extracted from the 34th Annual Review (for the year ended March 31, 1982) of the Northern Canada Power Commission.

The Northern Canada Power Commission is a Federal Crown Corporation which operates under authority of the Northern Canada Power Commission Act. It is concerned with the planning, construction and management of public utilities, primarily electrical, on a commercial basis.

The Commission is the principal producer of electricity north of 60° and operates the main transmission networks in the Yukon and Northwest Territories. Heat, water and sewerage service utilities are operated at Inuvik, N.W.T. Wholesale heat supply is provided to the Northwest Territories Government for distribution at Frobisher Bay.

It is a requirement of the Authorizing Act that operations of the Commission shall be self-sustaining within each rate zone as defined in the Act. Consequently, rates charged for utilities supplied must provide sufficient revenue to cover interest and principal payments on loans made to the Commission, operating, maintenance, administrative and all other expenses and contingency allowances.

### Statement of Operations for the Year ended March 31:

(\$ millions)

	1973/74 Total	1978/79 Total	1979/80 Total	1980/81 Total	1981/82 Total
Income	15.6	44.5	49.1	55.9	73.4
Expense	11.9	29.7	35.1	42.4	59.0
Interest on Loans	3.3	14.9	14.0	13.9	14.0
Net Income (Loss)	0.4	(0.1)	0.0	(0.4)	0.4
Number of Employees	311	317	304	330	327

# Appendix II

## Northern Transportation Company Limited (and subsidiary companies)

The following information has been extracted from the 1981 Annual Report of the Northern Transportation Company Limited.

Northern Transportation Company Limited has operated throughout the Mackenzie River system for 48 years, along the Western Arctic coast and inland for 25 years, and along the west coast of Hudson Bay for seven years. The company's marine operations have been the principal mode of transportation for community freight needs and logistic support for oil, gas and mineral exploration and development. The marine operations are complemented by Grimshaw Trucking and Distributing Ltd., a wholly-owned trucking subsidiary.

### Consolidated Statement of Income and Expenses\*

for the year ended December 31:  
(\$ millions)

	1973	1978	1979	1980	1981
<b>Income</b>					
Operating Revenue	16.4	26.1	31.5	34.4	42.0
Parliamentary Appropriation**	-	0.4	0.8	0.8	0.6
Other (Interest, Capital Gains)	0.1	1.1	2.0	2.9	3.9
	16.5	27.6	34.3	38.1	46.5
<b>Expense</b>					
Operating	18.3	24.8	28.9	30.7	39.8
Other (Interest on Debt)	2.3	3.1	3.1	3.0	3.0
	20.6	27.9	32.0	33.7	42.8
<b>Net Profit (Loss) before deferred Income Tax</b>	(4.1)	(0.3)	2.3	4.4	3.7
Less Income Tax (Credit)	(2.1)	-	0.2	2.1	3.5
<b>Net Profit (Loss)</b>	(2.0)	(0.3)	2.1	2.3	7.2
<b>Number of Employees</b>	1 127	792	763	713	738

\* *Principles of Consolidation* - The consolidated financial statements include the accounts of the company and its subsidiaries, Northern Offshore Limited (formerly Yellowknife Transportation Company Limited) and Grimshaw Trucking and Distributing Ltd., both of which are wholly-owned.

\*\* *Parliamentary Appropriation* - Parliament approved these payments to the company to defray the excess of costs incurred over revenue earned from the Keewatin resupply operations (1975 to 1981) and Great Bear Lake resupply operation (1978-1980). 1981 figures relate only to Keewatin resupply.

# In Conclusion

Serious readers requiring more detailed information for research purposes may order copies of the internal *Annual Northern Expenditure Plan* by writing to:

Department of Indian Affairs and Northern Development  
Northern Policy Directorate  
Ottawa, Ontario K1A 0H4

Readers interested in further information on the range of government activities and programs in the North might also send for the following publications:

*Annual Report – DIAND*

*Northern Natural Resource Development: Requirements, Procedures and Legislation*

*A Guide to Territorial Land Use Regulations*

*A Survey of Public Review Hearings in Northern Canada*

*The Lancaster Sound Region: 1980-2000, (The Green Paper)*

*Mines and Minerals Activities*

*Oil and Gas Activities*

by writing:  
Public Enquiries  
Indian and Northern Affairs Canada  
Ottawa, Ontario K1A 0H4









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# Government Activities in the North 1983-1984

## Annual Northern Expenditure Plan 1984-1985



Government  
Activities  
in the  
North  
1983-1984

Annual  
Northern  
Expenditure  
Plan  
1984-1985

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1983-1984/Programme annuel des dépenses dans  
le Nord 1984-1985*

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# Minister's Foreword

As Minister responsible for coordinating the government's policy and its application in Canada's North, I am pleased to present the second combined version of the related publications, "Government Activities in the North 1983-84" and "Annual Northern Expenditure Plan 1984-1985".

The publication is designed to provide as complete a picture as possible of the activities and related expenditures, both in and for the North, of federal departments and agencies and the two territorial governments.

The Hon. David Crombie, P.C., M.P.  
Minister of Indian Affairs and  
Northern Development

# Introduction

Over the past number of years, the Department of Indian Affairs and Northern Development has published annually *Government Activities in the North (GAIN)*, a narrative review of the northern activities of federal departments and agencies as well as those of the territorial governments.

A companion publication, *Annual Northern Expenditure Plan (ANEP)*, a compilation of planned, forecast and actual expenditures related to those activities detailed in *GAIN* has also been produced.

Regular readers will recall that the 1981-82 *GAIN* included, at the end of each departmental and agency section, the total forecast (1981-82) expenditure by that organization as well as a breakdown by Northern Objective of that spending. This was the first step in an evolutionary process designed, in the long-term, to combine the information and data contained in *GAIN* and *ANEP* respectively into one publication, and thus increase the usefulness of the information and data provided.

Accordingly, as was evidenced in the publication "*Government Activities in the North 1982-1983/Annual Northern Expenditure Plan 1983-1984*", the two books were combined into one volume and the *GAIN* portion saw the activities of the reporting agencies<sup>1</sup> displayed under one or more of the Economic Functions<sup>2</sup> under which *ANEP* expenditures are reported.

This format was found to be not entirely satisfactory, because, in the case of larger departments, the activities of which involve a number of Economic Functions, it was of course necessary to check through each section of the book to obtain an overall appreciation of the scope of operations of those departments.

To avoid this difficulty, a further revision of format has been adopted. Rather than breaking down the activities by Economic Function, each agency's complete *GAIN* report is presented under its agency title, and headings have been inserted to indicate that the section immediately following relates directly to the specific economic function shown in the heading.

To relate spending by economic function (*ANEP*) by a given agency for reported 1983-84 activities, reference should be made to the table "1983-84 *Forecast Expenditures by Agency by Economic Function*" found on Page 14 of the *ANEP* section of this publication.

<sup>1</sup> The term "agency" (when not otherwise modified) includes federal government departments, agencies and crown corporations, and the governments of the territories.

<sup>2</sup> The Economic Functions are defined on Page 13 of the *GAIN* section of this publication.

Government  
Activities  
in the  
North  
1983-1984



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## Health of Animals Directorate

### Economic Function: Long Range Research

#### Research Activities 1983-84

A study of diseases of bison is underway in Wood Buffalo Park and its environs. A cooperative project with Parks Canada and the N.W.T. Wildlife Service, with active participation of local lumberers and trappers and members of the Dene and Metis Bands, primary emphasis is to determine the prevalence of brucellosis and tuberculosis in bison and in other wild animals in the area.

A research project, based at the Animal Pathology Laboratory, Sackville, N.B., is designed to further characterize strains of the parasitic worm, *Trichinella spiralis* from muscles of various wild carnivores submitted from across the country. Arctic strains of this zoonotic parasite are able to survive refrigeration techniques and represent a threat to the food chain.

In Lethbridge, Alberta, the study on "The Arctic Fox: Rabies infection and age structure from trapline returns" continues. The study may be expanded to try to determine the seasonal movement of juvenile foxes and its relationship to the incidence of rabies.

## Food Production and Inspection Branch

### Food Inspection Directorate

#### Meat Hygiene Division

#### Review 1983-84

The annual slaughter of reindeer, usually conducted in February or March, by the firm "Canadian Reindeer (1978) Limited" of Tuktoyaktuk, Northwest Territories, did not take place this year but is anticipated in the fall of 1984.

The Meat Hygiene program continued to provide inspection staff to enable northern people them to slaughter and process local animals for distribution to potential domestic and foreign markets. Expansion to include other species, such as musk oxen, is not anticipated at the present time.

## Land Resource Research Institute

### Responsibilities

The Institute is responsible for national programs relating to land resources and agrometeorological services and carries out soil classification research, soil and vegetation surveys, as well as studies in agricultural land use evaluation and soil degradation.

#### Review 1983-84

At the request of the Geological Survey of Canada, field studies were conducted to establish relationships between soils and surficial deposits in central Yukon. Agricultural capability assessments were prepared for the Yukon government at selected locations. Soil temperature monitoring was continued to characterize the soil temperature regime.

A permanent soil survey office was established in Whitehorse. Agronomic fixed experiments were conducted in cooperation with the Beaverlodge Research Station of Northern Alberta.

Soil information input was provided for the 4th International Permafrost Conference covering Northern Yukon and the Mackenzie Delta of Northwest Territories and the information was published in the Guide Handbook.

## Biosystematics Research Institute

### Responsibilities

The program of the Institute emphasizes collection, development and taxonomic study of organisms of special interest to Canadians. The Institute prepares and transfers interpretive material to workers in related fields; and provides the National Identification Service utilized by clients throughout Canada.

#### Review 1983-84

Insect and plant specimens were collected in the Yukon, including fungi, vascular plants and insects for research studies and for incorporation into the collection of the Institute. A service providing identification of insects plants and fungi was provided.

# Canada Mortgage and Housing Corporation

## Economic Function: Welfare

This report relates to the operating year 1 January to 31 December 1983.

### Responsibilities

Canada Mortgage and Housing Corporation (CMHC), the federal housing agency, is responsible for housing and other programs under the National Housing Act. It insures residential mortgage loans made by approved lenders and provides direct financing to the Territorial housing corporations and private non-profit organizations for new construction as well as the rehabilitation of existing houses. Northern day-to-day activities are administered by branch offices in Yellowknife and Whitehorse.

### Review 1983

#### Northwest Territories

CMHC was involved in the construction, financing and/or rehabilitation of 657 units in the Northwest Territories. Of these units, 29 were financed directly by CMHC through cost shared programs with the Northwest Territories Housing Corporation (NWTHC). These programs provide subsidized rental housing in many of the smaller and isolated communities in the Territories. Seventy new units were built and 159 older existing units were rehabilitated. Twenty-one of these were completed under the Section 40 F/P Rural and Native Housing program which provides assistance to low income families in rural areas or in communities of less than 2500 residents. CMHC capital funding for construction and rehabilitation under the cost-shared programs totalled \$12.9 million. In addition, CMHC and NWTHC will share the operating subsidies in the years to come.

Through CMHC's Cooperative and Non-Profit Housing Program, 20 new units were approved for the Hillside Housing co-op at Frobisher Bay. CMHC provided \$3.2 million of mortgage insurance to the co-op and will provide a maximum annual subsidy of \$303 000.



Research Project - Insulated Wall-panel system, NWT

In addition to the mortgage insured for the Co-operative and Non-Profit project, CMHC insured mortgages for 216 new and existing homeownership units and 31 rental units. A total of \$17.6 million in mortgage insurance was issued by CMHC during the year. A further 29 households were provided with direct mortgage financing after being turned down by approved lenders active in the area.

Under its rehabilitation programs, CMHC provided funding for the rehabilitation of 132 units for a total expenditure of \$0.7 million. Of this, CMHC directly delivered the funding for 32 units through the Residential Rehabilitation Assistance Program (RRAP). On behalf of CMHC, the NWTHC delivered the funding under the Emergency Repair Program (ERP) for 48 units and under the Enriched Emergency Repair Program (EERP) for 52 units. In addition to these rehabilitation programs, the Canadian Home Insulation Program (CHIP) which is administered by CMHC on behalf of Energy Mines and Resources, provided 658 grants totalling \$295 816 to homeowners to assist them in upgrading the insulation in their houses.

Through the Canadian Homeownership Stimulation Plan (CHOSP), federal \$3 000 grants were made to qualifying purchasers of new and existing homes. This program provided a stimulus to the housing industry and during the year 46 grants totalling \$138 000 were committed.

Total federal housing subsidies estimated at \$19.2 million were provided to residents of the Northwest Territories.

## Economic Function: Short Range Research

During the year an evaluation of an insulated wall-panel system for use in the construction of houses in the NWT was initiated. In addition, research projects continue from previous years to evaluate the performance of house designs in areas of structural integrity, energy conservation, maintenance and cost, with the objective of improving existing dwelling units and developing guidelines for future housing.

### Yukon

## Economic Function: Welfare

During 1983, the Whitehorse Branch of CMHC insured a total of \$10.5 million of residential mortgage financing in the Yukon for the construction or acquisition of 195 units. Ninety percent of these funds was used for the acquisition of existing single-family residences and the remainder for new single-family units and the construction of a senior citizens rental housing project.

The Corporation provided direct capital for 25 units under Section 59 On-Reserve Rental as well as annual subsidies totalling \$219 000 on these units under Section 56.1 Private Non-Profit Program.

In 1983, the Council of Yukon Indians (CYI) received approximately \$112 000 from CMHC in the form of a Sustaining Grant, to enable the development of strong local housing delivery systems. A further \$32 500 was made available to CYI for Client and Cadre Training. In addition, \$108 000 was provided to CYI through the Emergency Repair Program (ERP) to deal with serious emergency repairs needed to bring 73 rural housing units up to a reasonable standard of health and safety on a short-term basis.

## Total Activity Approved — 1983

	No of Units	Am \$
<i>NWT</i>		
(New and Existing)	525	32
(Rehabilitation and Repair)	132	
(Homeownership Assistance — CHOSP)	46	
<i>Yukon</i>		
(New and Existing)	220	11
(Rehabilitation and Repair)	162	
(Homeownership Assistance — CHOSP)	189	
(Renovation — CHRP)	63	



Borealis Cooperative Project, Yellowknife, NWT

Through delivery agreements with the Teslin Indian Band and the Council for Yukon Indians, CMHC provided \$342 000 in funds during 1983 for the repair of 74 housing units under the Emergency Repair Program. Approximately \$300 000 of these funds were forgivable.

In September of 1983, the City of Whitehorse entered into an Agreement with CMHC for delivery of the Urban RRAP program in Whitehorse. Yukon Housing Corporation is delegated to deliver this program on behalf of the City. During the fourth quarter of 1983, CMHC provided \$39 000 in the form of 31 loans under the Urban RRAP program to repair and improve 15 housing units. Under the Canadian Home Insulation Program (CHIP), CMHC administered the delivery of 175 grants totalling \$73 957 were approved.

Throughout the year, 189 grants totalling \$567 000 were also approved under the Canada Homeownership Stimulation Plan (CHOSP). The majority of the \$3 000 grants were to homeowner builders.

During 1983, CMHC provided forgivable loans under the Canada Home Renovation Plan (CHRP) totalling \$137 000 to 63 homeowners in the Yukon.

## Economic Function: Communications

Canada Post Corporation is a social business that links all Canadians from the largest urban centres to the remotest town in the Arctic. One of the most challenging parts of this task is to provide mail service to the vast area making up the Yukon and Northwest Territories.

Transportation is the backbone of any postal service, and in the Far North it means, to a large extent, air transportation. However, other means of delivery are used as well. For example, the Dempster Highway, which crosses the Arctic Circle and continues on to Inuvik, provides Canada Post with an alternative method of delivery. Should a prolonged period of adverse weather prevent aircraft from flying, then mail can be moved overland. Another change in the distribution of mail to the northern areas involves the switching of mail from courtesy bags to commercial flights.

For years, mail destined for mining or exploration companies was placed in company bags (courtesy bags) and flown by company aircraft to their personnel. Now the majority of such mail is carried on scheduled commercial flights. Most of the mail is carried by fixed-wing aircraft, but helicopters also have a role to play in delivering northern mail. Mail addressed to the crews on government-owned icebreakers or commercially owned offshore drilling rigs is dispatched and received from onshore locations by helicopters.

Since becoming a Crown corporation in 1981, Canada Post has introduced a number of initiatives to respond to its customers' needs in a more cost-effective manner. The Corporation was reorganized into nine Divisions. Four of these have northern mail service as one of their responsibilities. Divisional Head Offices are located in the areas they serve, close to the geographic area, thus shortening the lines of control for northern service. The Pacific Division, with its Head Office in Vancouver, is responsible for the Yukon and the section of the District of Mackenzie that contains Watson Lake and Dawson Creek. The Foothills Division, with Head Office in Edmonton, is responsible for the remainder of the District of Mackenzie and the western half of the District of Franklin.



The Whitehorse Post Office provided the display area for ice sculptures during this year's "Sourdough Rendezvous" the community's annual winter carnival.

The Mid-West Division, with Head Office in Winnipeg, is responsible for the District of Keewatin (west coast of Hudson Bay). The Montreal Division, with Head Office in Montreal, is responsible for the eastern half of the District of Franklin and the part of Quebec that extends north of the 60th parallel. The post office at Sanikiluaq, Belcher Islands, is south of the 60th parallel, but since this is an island in Hudson Bay, it is served by Canada Post's northern service and comes under the jurisdiction of the Montreal Division.

Below these Divisional levels, additional reorganization has been carried out to meet local requirements. For example, postmasters in Hay River, Inuvik, and Yellowknife are responsible for all postal operations within their respective zones. This provides postmasters in the surrounding settlements with a postal official who is relatively nearby to call on for assistance or guidance.

### **Review 1983-84**

In 1983 Yellowknife became the second northern community to be given Priority Post (Courier) service. Now both Yellowknife and Whitehorse have both home and business delivery of parcels. Yellowknife, the capital of the Northwest Territories, was also the site of a special event in 1984. On 15 March the first new stamp issued in 1984 was unveiled in Yellowknife. The stamp commemorated the 50th anniversary of the community, which began as a gold mining site and has since become the capital and the major business centre of a vast northern territory.

Canada Post also participated in other events of local importance. In Dawson City, the stately old post office, which was built at the turn of the century, was restored and is now a prime tourist attraction. In Whitehorse postal employees played a major part in the Yukon Sourdough Rendezvous, a mid-winter festival that celebrates the early gold-rush days. The front yard of the post office was also the site for ice sculptures. In Inuvik the post office held an open house to mark the 25th anniversary of both the community and Canada Post's arrival in that community.

#### **Plans for 1984-85**

Detailed plans for the northern postal service during the fiscal year 1984-85 are based on responding to customers, needs with efficient, cost-effective service. Shifts in population or changes in community requirements may necessitate further changes. For example, a test program is being carried out in Yellowknife, and elsewhere, using community mail boxes, which are located at convenient intervals in residential areas so that residents can pick up their mail without having to go to the post office. If this cooperative test between communities and Canada Post proves feasible and desirable, it may be expanded to other sites in the North.

Despite the special problems posed by the sheer physical size of the North, Canada Post Corporation will continue to maintain and improve postal service to customers in this region through careful and efficient programs based on evolving communications needs.

#### **1983**

##### **Post Offices North of the 60th Parallel**

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1.	Eureka	41.	Ross River
2.	Grise Fiord	42.	Destruction Bay
3.	Mould Bay	43.	Carmacks
4.	Resolute	44.	Coral Harbour
5.	Nanisivik	45.	Tungsten
6.	Pond Inlet	46.	Baker Lake
7.	Arctic Bay	47.	Chesterfield Inlet
8.	Sachs Harbour	48.	Rae
9.	Clyde	49.	Yellowknife
10.	Broughton Island	50.	Rankin Inlet
11.	Tuktoyaktuk	51.	Whale Cove
12.	Holman	52.	Eskimo Point
13.	Igloodik	53.	Ivujivik
14.	Hall Beach	54.	Salluit
15.	old Crow	55.	Kangisjuag
16.	Aklavik	56.	Quaqtaq
17.	Inuvik	57.	Haines Junction
18.	Fort McPherson	58.	Whitehorse
19.	Arctic Red River	59.	Snowdrift
20.	Cambridge Bay	60.	Carcross
21.	Spence Bay	61.	Tagish
22.	Pangnirtung	62.	Fort Simpson
23.	Gjoa Haven	63.	Teslin
24.	Coppermine	64.	Swift River
25.	Repulse Bay	65.	Watson Lake
26.	Dawson	66.	Fort Liard
27.	Elsa	67.	Fort Providence
28.	Fort Good Hope	68.	Fort Resolution
29.	Mayo	69.	Hay River
30.	Frobisher Bay	70.	Pine Point
31.	Beaver Creek	71.	Fort Smith
32.	Pelly Crossing	72.	Povungnituk
33.	Norman Wells	73.	Kangisuk
34.	Fort Norman	74.	Sanikiluaq
35.	Fort Franklin	75.	Pelly Bay
36.	Lac la Martre	76.	Akulivik
37.	Wrigley	77.	Lupin
38.	Cape Dorset	78.	Polaris
39.	Lake Harbour	79.	Paulatuk
40.	Faro		

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# Canadian Broadcasting Corporation

## Economic Function: Communications

### Northern Service

CBC's Northern Service is responsible for the provision of broadcasting service to the people of Canada's North. Radio service is provided by medium and shortwave transmissions. Television service is provided by means of a national network fed by satellite.

### *Review 1983-84*

At the request of the Minister of Communications, CBC contributed to the development of a Northern Regional Broadcast Plan. The Plan proposed enhanced CBC regional TV and radio programming in the northern parts of seven provinces and the two northern territories. The plan also includes the provision of increased technical facilities to assist native organizations in the distribution of their program material.

25th Anniversary of the Northern Service

Celebrations to mark Northern Service's first quarter-century of radio operations were held in Whitehorse, Dawson City and Yellowknife.

### Training

Inter-cultural workshops were held with staff at Whitehorse, Inuvik, and Yellowknife.

Legal seminars for English and native language broadcasters were given by CBC legal staff.

Supervisory skills training was provided in the North (at Yellowknife) for the first time.

Inuit broadcasters were provided with specialized training in coverage of Legislative Assembly proceedings.

# Canadian National

## Economic Function: Transportation

### Responsibilities

CN is responsible for providing the North with transportation and telecommunication services. Historically, this has entailed transportation to mining and forest industries, to exploration and construction projects, and telecommunications to the residential and commercial sections.

### Review 1983

CN Rail provided the rail link in the intermodal transport of pipe to be used in the construction of the oil pipeline from Norman Wells, NWT to Zama Lake, Alberta. The pipe was transported by CN Rail from Edmonton to Hay River where it was transferred to barges and trucks for delivery to construction stockpile sites along the Mackenzie River between Fort Simpson and Norman Wells.

With continued drilling activity in the Beaufort Sea during 1983, CN Rail transported consumable materials to on-shore supply bases via Hay River and the Mackenzie River System.

Depressed metal prices forced CN Rail's major shipper in the North, Pine Point Mines, to shut down operations during the first six months of 1983. Shipments resumed mid-year when the mine re-opened.

### NorthwesTel

## Economic Function: Communications

CN's telecommunications subsidiary, NorthwesTel Inc. undertook further expansion and extension of its network.

During 1983, NorthwesTel continued with its major investment program of replacing small rural electromechanical telephone exchanges with remotely administered digital exchanges. The small digital exchanges were installed at Arctic Red River, Paulatuk, Holman, Sachs Harbour, Spence Bay, Pelly Bay, Gjoa Haven and Old Crow.

Telephone service was established to the small Yukon community of Tagish with the installation of a small new digital community dial office.

A new Digital Local and Long Distance Exchange was installed at Fort Nelson, B.C., to replace outmoded electromechanical equipment. This new exchange processes all Direct Distance Dialed toll traffic for northern B.C., as well as local service for Fort Nelson.

Touchtone service was provided at 8 additional locations making this service available to 95% (23,672) of all lines in service.

Expanded capacity was provided at four existing SA-1 crossbar exchanges.

Automatic Number Identification (ANI) capability was added at 11 locations as well as to the 1400 line SL-1 Private Automatic Branch Exchange serving the Northwest Territorial and Federal Government agencies. ANI is now available to 93% (23,671) of all working lines.

Public Mobile Telephone and Operator Number Identification services were re-homed from Hay River to Fort Nelson.

Fort Nelson area Zero Level dialled traffic was re-homed to Whitehorse Toll Operator positions.

Zero Plus Dialling capability was added at an II local switching offices.

Upgrading of the Whitehorse-Mount Berdoo (near Carmacks, Yukon) microwave system was undertaken to increase capacity from 300 to 960 voice channels. Completion is now expected in March 1984. This system is the major facility to Whitehorse for several other systems serving Dawson, Faro, and the MacMillan Pass.

A new computer was placed in service at Whitehorse to handle customer service functions including Daily Service Orders, Trouble Tickets, Directory Assistance and Plant Records.

### Statistics at December 31, 1983

No. of Exchanges	B.C.	11
	Yukon	19
	NWT	34
	Total	64
Main Stations		26,960
Total Telephones		44,315
Communities Served		61
DDD Access		99.9%
ANI Availability		93%
Touch-Tone Availability		95%

### Plans for 1984

## Economic Function: Transportation

Rising lead and zinc prices should result in higher levels of production for Pine Point Mines and increased traffic for CN Rail in 1984. If Cadillac Explorations' new concentrator, located 160 kilometers northwest of Fort Simpson, NWT, begins operation during the year, up to 91,000 tonnes (on an annual basis) of lead/zinc concentrate traffic may materialize for movement to processors in southern Canada.

## Economic Function: Communications

Phase III of a five year program to replace obsolete electromechanical exchanges with digital equipment will continue in 1984. Electromechanical equipment will be replaced at Dease Lake, Iskut, Fort Providence, Wrigley, Fort Norman, Fort Franklin, Snowdrift, Fort Liard, Telegraph Creek, Toad River, Carmacks, Aklavik, Fort Good Hope and Wonowon.

The existing communications concentrator at Mile 92 will be removed and the community served as a remote of the Wonowon digital switch.

A second concentrator system will be added to serve the area of Wolf Creek from Whitehorse exchange.

Automatic Number Identification equipment will be added at 19 locations, increasing ANI capability to 96.6% (26,911) of all working lines.

Touchtone capability will be added to availability on 97.2% (26,264) of all lines in service. All exchanges will have DDD capability.

Additional Long Distance Toll Trunks will be provided at 17 local switching offices.

Zero Plus Dialling capability will be provided to 22 additional locations.

Power generating equipment at nine of the Mackenzie Valley microwave system sites will be replaced with high efficiency engines requiring less fuel and maintenance.

# Canadian Transport Commission

## Economic Function:<sup>1</sup>

### Transport Committee

#### Responsibilities

ATC licenses air carriers for commercial air services; provides economic regulation of air carriers; investigates and surveys operations and developments of commercial air services in Canada and advises the Minister of Transport on matters relating to civil aviation.

#### Review 1983-1984

W Line contracts were awarded to Pacific Western Airlines Limited (PWA) for vertical airlift (north-south) for the period October 1, 1983 to September 30, 1984; and to Nordair which sub-contracted part of the operation to Bradley Air Services Ltd. for the lateral airlift (east-west) for the period October 1, 1983 to September 30, 1984. Supervision and coordination of these contracts continues.

#### Fare Hearing

Phase I of the comprehensive public hearing was held in Hull Québec February 23, 1983. Phase II of this hearing took place in Yellowknife, NWT March 26 and in Whitehorse, Yukon March 27.

A wide range of topics including regulation of domestic advance booking and inclusive tour charters were discussed. The ATC panel will return to Hull, April to start Phase III of the hearing which will allow participants to engage in cross-examination, submit rebuttal evidence and give final oral arguments. The panel expects to submit its report two months later.

#### Transportation in Northern and Remote Areas

At the end of 1983, the Air Transport Committee received representations to examine the subject matter of the air fare hearing to encompass the cost of air transportation to residents of northern and remote communities. After considering the

impact this would have on the scope of the hearing, and the evident need for sittings in a representative number of northern and remote communities, the Committee proposed to have a separate hearing on the matter of the cost of air transportation in northern and remote areas. This hearing will be held as soon as possible after the national air fare hearing is completed.

#### Helicopter Industry

The Air Transport Committee announced on March 12, 1984 that immediate steps would be taken to amend the Air Carrier Regulations to extend the trial period of partial economic deregulation of commercial helicopter services in Canada. The trial period which began in August, 1980 and was to have ended in June 1984 will now continue until December 31, 1987.

The extension was based upon the recommendations of a Committee panel which held a public hearing across Canada in March 1983 to assess the effects of partial deregulation. The panel concluded that the trial period was "significantly obscured" by the recession and it was "not yet clear how the industry would function in a freer regulatory environment."

The partial deregulation is aimed at making commercial helicopter services more flexible and responsive to market demands. Charter carriers are freed from the requirement to file long-term rates in respect of charters of 30 days or more. Licensed charter and specialty carriers are also exempted from all but the financial requirements of licensing so they can be authorized to provide services using helicopters in weight groups for which they have not previously been licensed.

The ATC will continue to monitor, in co-operation with Transport Canada, the degree of participation of foreign helicopters working in Canada so that this practice is not abused.

#### Water Transport Committee

The Water Transport Committee held a public hearing in Inuvik, NWT in March 1983 as part of its investigation of six applications to operate services within the Mackenzie Delta and between Tuktoyaktuk and Inuvik. A decision issued April 30, 1983 granted various licences for scheduled and unscheduled services during 1983 to Northern Transportation Company Limited; Arctic Transportation Ltd.; Jim Gordon

operating as Beluga Transportation; Coastal Marine Ltd.; and David Storr and Sons Contracting Ltd.

As a result of the planned withdrawal of the Northern Transportation Company Ltd. (NTCL) from lake Athabasca water services, and in response to a request by the Minister of Transport, the Committee undertook an investigation in June, 1983, to find potential operators to replace NTCL in that region. A public hearing was held in Fort McMurray, Alberta in January, 1984 to examine four applications for 1984 licences. A. Frame Contracting Ltd., Pine Creek Construction Ltd., and Norsask Marine Ltd. were granted licences to serve all points in Lake Athabasca and its tributaries - namely Peace, Slave, Quatre Fourches and Athabasca Rivers and all points thereon, terminating at Fort Fitzgerald in the north and Fort McMurray in the south. An application submitted by Western Shipping Calgary Ltd. was denied.

#### Research Branch

At the request of the Government of Yukon, the Commission agreed in June 1983 to conduct an independent inquiry into the transportation requirements of the territory. The inquiry had two basic objectives: 1) to obtain and evaluate information and opinions on existing and potential surface transportation systems servicing Yukon and 2) to make recommendations. Yukon initially set a deadline of June 1984 for the final inquiry report, but subsequently asked that certain major issues be dealt with as a matter of urgency. These issues centred mainly on the future transportation needs of Cyprus Anvil Mining Corporation. The Commission, therefore, submitted a preliminary report in December 1983 and requested all interested parties to review the report and provide comments before February 15, 1984 as the final report to the Yukon Government is expected to be submitted in mid-May 1984.

The Branch also issued a report entitled "The Role of Churchill in the Transportation System for Northern Canada" (No. 1983-03E).

# Communications Canada

## Economic Function: Communications

### **Responsibilities**

The Department of Communications, in fostering the development and operation of telecommunications for Canada, directs attention to the specific needs of northern Canadians and endeavours to recognize these needs when developing national communications policies and programs.

### **Review 1983-84**

The Department was involved in experimental and operational activities in the North and participated in a number of joint ventures with other government departments and private groups.

The Department maintains its role as co-ordinator of northern communications planning. A major part of the Department's northern involvement is administered through its committees in the two territorial capitals, Whitehorse and Yellowknife. The DOC district manager for Yukon is a member of the Federal Interdepartmental Coordinating Committee (FICC) in Whitehorse and chairs the Communications Sub-Committee of the FICC. The DOC Central Region director who holds responsibility for the NWT and the prairie provinces is a member of the NWT Coordinating Committee in Yellowknife and chairs that Committee's Standing Group on Communications.

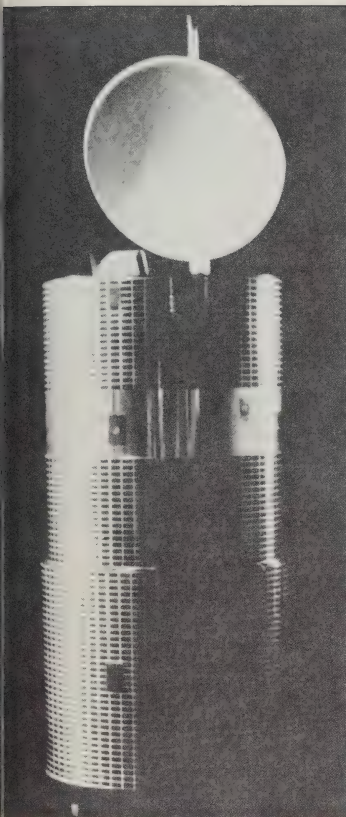
The Department continued its participation in the shared program, Summer Canada Youth Employment Program, with the Department of Employment and Immigration. This shared program, which operates in Northern Manitoba, Saskatchewan and Alberta as well as all across the NWT and Yukon, has been useful in providing basic training in communications and in introducing young people to the potential of a career in communications. With the program completely decentralized to the District Office level, DOC has created communications training positions, many of which have been filled by native students. In the 1983 fiscal year, the Central Region was able to provide 69 jobs of which 59 were provided to Native students for a total of 471 work weeks.



The Department of Communications continues to examine ways by which television services can be extended to Canada's north.

These projects helped meet DOC's objectives of broadening the use of community resource people trained in communications. The long-term potential of this program is not only in the identification of new personnel but the reduction of unemployment and creation of new opportunities.

The Department, over a seven year period, was involved in a number of experiments using the Anik-B satellite. These experiments have had significant implications for the extension of basic television services in the far North. The Anik-B satellite, the world's first dual-band satellite, operates in both the conventional 6/4 GHz band and in the new 14/12 GHz frequency band. DOC leased this latter high-frequency portion for its pilot project.



A variety of broadcast services available on the Canadian Satellite system, such as those of Anik C, continues to grow.

The Anik-B pilot projects have now been phased out but the Central Region has begun transferring the earth stations to the government of the Northwest Territories. Thus, several communities have continued to receive communications from Canadian satellites. Seven earth stations were transferred to the Territorial Government.

The Department of Communications plays a central role on the National Liaison Committee and the Regional Liaison Committees of the Northern Native Broadcast Access Program. Under this program, Northern natives will receive \$40.3 million through a four-year program to be administered by the Secretary of State. This program, a central component of the Northern Broadcasting Policy, will enable Inuit to maintain the broadcasting services they have already established and will provide Indian and Métis communication societies with an opportunity to initiate equivalent radio and television services for native audiences in the Yukon, Northwest Territories and the northern regions of seven provinces.

The Secretary of State announced, on October 20, 1983, funding of \$145,419 under the Northern Native Broadcast Access Program for two new communications research projects in the NWT. This funding will enable these societies to develop effective programming and distribution plans before applying for operational funds in April, 1984. The approval of these two projects means that a total of 4 societies in the Yukon and NWT are now participating in the program.

The variety of broadcast services available on the Canadian Satellite system continues to grow. Canadian Satellite Communications Inc. (CANCOM) continues to expand its service to underserved communities in rural and northern parts of the country. Some fourteen communities in the Northwest Territories and Yukon have been authorized by the CRTC to receive the CANCOM service. This service now provides signals from 4 Canadian television stations, 9 Canadian radio stations and 4 U.S. network television signals (CBS, NBC, ABC, PBS).

In addition to the CANCOM service, a number of other television services are available to underserved northern communities via the Canadian satellite system including the CBC network service, the House of Commons channel, and pay television services. In addition to the national pay television services, a regional general interest pay television service is available to the inhabitants of British Columbia and the Yukon. On July 17, 1983 following a public hearing, the CRTC approved an application by Allarcom to extend its general interest pay television service to two western provinces and the Northwest Territories.

All of these developments represent a remarkable improvement in the programming available to northern communities in just a few years and reflect, to a large extent, the main principle of the Northern Broadcasting Policy: to provide northern citizens with greater programming choice.

The Department of Communications continued to make available a handbook, *Community Distribution of Satellite Programming*, providing the information needed to establish undertakings for the redistribution of satellite programming. The guide is primarily aimed at providing community groups interested in obtaining a licence with the necessary information on this procedure and on the technical requirements for earth stations and broadcasting undertaking a radio or television distribution system in a remote community. In addition, the Department of Communications continued to operate in its regional and district offices a program of information on licensing procedures and technical requirements for satellite earth stations to groups in northern and rural communities interested in establishing or expanding their community distribution system.

The Department of Communications continues to examine ways by which television services can be extended to Canadians who live in smaller communities and isolated homes in northern and rural parts of the country. For that reason licensing requirements have been relaxed to allow the use of earth stations by individuals. The implementation of a true direct-to-home satellite broadcasting system, however, requires a long lead time. The Department of Communications took the first step in the planning process in the spring of 1983 with the publication of the report "Direct-to-home Satellite Broadcasting for Canada" which summarizes some of the legal, regulatory, technical and institutional options derived from many studies undertaken by the Department over the past two years. In addition, the Department announced in October 1983, that it was



The Department of Communication is reviewing direct-to-home satellite television in Canada and its potential for small northern communities and isolated homes.

prepared to receive public comment on the issues surrounding the introduction of direct-to-home services for the many Canadians, such as those residents of the Yukon and Northwest Territories who cannot be served by more conventional delivery systems. More than twenty submissions were received commenting on both the long-term development of direct broadcasting satellite delivery systems and the feasibility of using existing satellite facilities for direct-to-home delivery of broadcasting programming. A review procedure of these submissions has been undertaken and will continue into the 1984-85 fiscal year.

The CRTC has issued several broadcasting licences to communities in the Yukon and the Northwest Territories,

thereby increasing access to radio and television programming provided by the CBC and to the development of community radio and television stations. New television stations approved for ten communities in the Northwest Territories include: Wrigley, Rae Lakes, Whale Cove, Broughton Island, Lac La Martre, Repulse Bay, Sachs Harbour, Lake Harbour, Clyde River and Igloodik. Licence applications for new FM radio stations were approved in the Northwest Territories for the communities of Whale Cove, Rae Lakes, Paulatuk, Aklavik, Lac La Martre, Repulse Bay, Sachs Harbour and Lake Harbour. In the Yukon, similar licenses were approved for Dawson City and Pelly Crossing. In addition to these new services, the CRTC also renewed the radio licenses in four communities in the Yukon and thirty four in the Northwest Territories as well as three television licenses in the Yukon and nine in the Northwest Territories and one cable licence in Whitehorse.

In July of 1983, the CRTC published *Community Television Handbook: for Northern and Underserved Communities*. This booklet is designed to provide municipalities, citizens' groups, and potential users of CANCOM affiliates with the basic information required for the implementation of community programming. The publication addresses the social benefits to be derived from local programming and describes the procedures in an easily understood style.

During the past year, the Department of Communications has maintained close working contact with the CBC Northern Service. Both DOC and CBC support more native television training and production.

The Department of Communications continues to be responsible for all aspects of authorization, licensing, frequency assignment and spectrum management under the Radio Act. In the North, this service is provided by the District Offices in Yellowknife, Fort Smith and Whitehorse. The Fort Smith Office also operates a monitoring station.

#### **Plans for 1984-85**

The Department of Communications will continue to promote communication services throughout the North and to encourage the development of more northern and native programming on radio and television. The New National Broadcasting Policy and the Northern Broadcasting Policy represent important steps toward achieving this objective.

The Summer Youth Employment Program, shared with Employment and Immigration, will be continued again in 1984-85 in both the Northwest Territories and the Yukon.

The Department will continue its review of Direct-to-Home satellite television and its potential for improving television service for small northern communities and isolated houses. An updated version of *Community Distribution of Satellite Programming* which reflects new developments in satellite delivered television is expected to be available for community groups in underserved parts of rural and northern Canada.

It is anticipated that in the 1984-85 fiscal year, the CRTC will continue to authorize broadcasting undertakings in northern communities to distribute the satellite-delivered CANCOM television and radio service and Canadian pay television services.

## Economic Function: General Government Services

### Responsibilities

The Minister of Justice appoints judges to the Territorial Supreme Courts while the department, with offices in Whitehorse and Yellowknife, directs court proceedings on behalf of the Crown under the *Criminal Code*, other federal statutes and territorial ordinances. The department, through these regional offices, also gives legal advice and assistance to the Territorial field offices of other federal departments. In addition, the department shares the costs of legal aid, the native courtworker program and compensation to victims of violent crimes in the Territories.

### Review 1983-84

Payments totalling \$639,494 were made to the Northwest Territories in 1983-84 plus retroactive payment of \$3,481 for 1981-82 expenditures, including \$415,000 for territorial legal aid expenditures incurred in 1982-83, \$26,948 for compensation in 1982-83 to victims of violent crimes and \$194,065 for native courtworker services including \$7,810 for services in 1982-83 and \$186,255 for services in 1983-84. Payments totalling \$333,835 were made to the Yukon Territory, including \$220,000 for legal aid expenditures in 1982-83, and a retroactive payment of \$50,000 for legal aid expenditures in 1978-79, 1979-80 and 1980-81, \$18,385 for compensation in 1982-83 to victims of violent crimes, and \$45,450 for native courtworker services in 1983-84.

In 1982-83 the legal aid cost-sharing agreement with the Northwest Territories was extended for the expenditure year 1981-82, and the maximum federal contribution increased to account for increased costs. Similarly, federal cost-sharing to the Yukon was extended for a year and was increased in amount. The Yukon agreement was re-written at the same time to conform more closely to the cost-sharing arrangements for the Northwest Territories and the provinces.

### Plans for 1984-85

During 1984-85, it is anticipated that the present review of the legal aid arrangements in the two territories will be completed with a view to reflecting changes that may be made as a result of the current legal aid negotiations with the provinces.

## Economic Function:<sup>1</sup>

Eldor Resources Limited, the wholly owned subsidiary of Eldorado Nuclear Limited, a federal Crown Corporation, participated in one field exploration program in the Mackenzie District of the Northwest Territories in 1983. An interest was maintained in one other project in the Mackenzie District and two in Yukon Territory although no work was carried out.

Eldor anticipates that this level of exploration will be maintained in 1984.

1) Eldor Resources is not reported in ANEP

# Employment and Immigration Canada

## Economic Function: Economic Development (Human)

Employment and Immigration Canada (EIC) provides employment services to the Northwest Territories through Canada Employment Centres (CECs) in Yellowknife, Hay River, Inuvik and Frobisher Bay. Full-time sub-offices are maintained at Fort Simpson, Fort Smith and Rankin Inlet. An Employment Development Branch office in Yellowknife also administers a variety of programs in the N.W.T.

A Whitehorse-based staff concentrates on maintaining and improving employment services to all areas of the Yukon. Outreach workers complement this work and provide employment services in several outlying areas.

### Review 1983-84

In the N.W.T., a full range of unemployment insurance programs is available from CECs in both Frobisher Bay and Yellowknife. From April 1, 1983 to March 31, 1984, 4,801 claims were received from N.W.T. residents. Gross benefits paid out during the period amounted to \$15,064,000.

From April 1, 1983 to March 31, 1984, 5,517 applications for Unemployment Insurance were received from residents of the Yukon. Gross benefits paid out during the period amounted to \$18,751,000.

The Canada Immigration Centre (CIC) in Whitehorse operates on a year-round basis and provides the full range of immigration services, while the CIC in Beaver Creek operates from May to September primarily as a Port of Entry. During the 1983-84 fiscal year, 48 immigrant and 256 visitor applications were processed. A total of 1,912 persons were referred for Immigration Secondary Examination. As a result, 14 were refused entry. Inland, 166 persons were investigated. Fifty-five were found to be in violation of the Immigration Act.

## Northwest Territories

The Yellowknife CEC with a budget of 48 person years (five of which provide itinerant services), and its branch offices, serve about 34 settlements and a population of more than 25,700. The Centre is responsible for providing services to about two-thirds of the N.W.T. Services are largely directed toward government offices in the capital city and the major mines in the area, including two large gold mines in Yellowknife.

The CEC in Hay River with a budget of six person years (two of which are dedicated to itinerant services) looks after a labour market area of about 78,000 km<sup>2</sup> with a population of approximately 5,411.

The Inuvik CEC with a budget of 12 person years (three of which are dedicated to itinerant services) is responsible for an area of about one-sixth of the N.W.T. The combined population of the 9 settlements it serves is approximately 6,265.

The Frobisher Bay CEC, budgeted with six person years is also responsible for another one-sixth of the N.W.T. and serves 14 settlements with a population of more than 8,300. This CEC also serves the Baffin Region.

From April 1, 1983 to March 31, 1984, the N.W.T. CECs recorded 4,800 new registrations and 6,000 registration revivals. In an effort to find employment for new registrants, the CECs referred 9,500 job seekers to vacancies. In all, more than 3,300 people were placed. The Employment Development Branch office was also active during 1983-84.

Four Job Creation programs, (Career-Access, Canada Works, Job Corps and Local Employment Assistance and Development (LEAD)) accounted for a major proportion of the work carried out by the CECs in the N.W.T.

The Career-Access Program provides employment opportunities for those who face serious difficulties in finding on-going employment because they lack work experience, are disabled or otherwise disadvantaged. It operates through a system of wage subsidies to employers. Under this Program \$469,624 was spent during the fiscal year to create 66 jobs. The jobs created amount to a type of internship, allowing native and non-native people to gain valuable on-the-job training and experience.

The Canada Works Program spent \$5.1 million to create 852 jobs. The Program, in collaboration with private industry, supports a wide range of projects that last from six to 52 weeks. The program is designed primarily to provide jobs in a time of economic slump or unexpected crisis, such as the closing of a major employer. Activities funded included construction of houses on and off reserves, building renovations and garage exteriors. Canada Works, under Section 38, was also involved in mine development and exploration.

Under the Job Corps Program, \$1.9 million was spent during fiscal year 1982-83 to create 116 jobs. Funding is offered to businesses, volunteer agencies, charitable organizations, individuals and community groups to organize projects that will provide skills and motivation to the employment disadvantaged to assist them in joining the regular work force. The type of projects funded in the N.W.T. include training of natives in butchering, preparing native women for participation in the labour force through lifestyles training and counselling, training native women in the art of developing small businesses, training native people in a local print shop in a variety of art media.

The Local Employment Assistance Program (LEAP), a predecessor of the new Local Employment Assistance and Development (LEAD) program, provided \$300,000 for the creation of 15 jobs. LEAP assisted communities hit with slow economic growth and chronic high unemployment, by creating local development corporations and investing in projects meeting the communities' own economic development priorities and needs.

Under the National Institutional Training Program, the Commission purchased 83,000 training days from the Department of Education of the Government of the N.W.T. and started a total of 1,117 trainees in the program. Skill training was provided to 513 trainees. In addition, 167 apprentices received classroom training during the year and 309

people received academic upgrading. The Commission provided \$3.5 million to purchase training courses specifically for Native people to enable them to take better advantage of available employment opportunities. Total expenditure was about \$3 million. This included \$1.8 million for income support.

The Norman Wells Oilfield Expansion and Pipeline Project was the focus of special training initiatives. About \$2.1 million, including \$1.6 million for course purchases and \$0.5 million for training allowances and trainee travel was spent.

Under the Industrial Training Program, which provides financial assistance for employee training, 222 Natives received training.

The Canada Manpower Mobility Program provides financial assistance to workers who must move from one community or region to another to take a job or get vocational training. Assistance is also provided for those who must travel to look for work or obtain employment services offered by CECs. During fiscal year 1983-84, \$41,404 was spent to relocate 34 residents of the N.W.T., to provide exploratory travel for 12 people and to assist 2 people to travel to temporary employment.

Summer Canada funded 131 projects in the N.W.T. during the year, which provided summer work for 507 students at a cost of \$1.1 million. Canada Employment Centres for Students operated in the community of Yellowknife from May to August.

#### **Plans for 1984-85**

The Commission will commence delivery of two new programs - Options North and Business Management Development - which were authorized under the Canada/N.W.T. Human Resource Development Subsidiary Agreement signed in 1983-84. Altogether, some \$5.57 million will be invested by the Commission under this Agreement over the next three years.

## **Yukon Territory**

### **Review 1983-84**

The Commission continued to emphasize the need to develop the human resource potential of the Yukon and the importance of training Yukon workers and upgrading their skills.

The CEC in Whitehorse with a budget of 42.5 person years, serves the entire Yukon population of 23,216. Particular attention was paid to the Commission's four Job Creation programs.

From April 1, 1983 to March 31, 1984 the Yukon CEC recorded 3,200 new registrations and 1,300 registration revivals. In an effort to find employment for new registrants, the CEC referred 7,500 job seekers to vacancies. In all, more than 2,700 people were placed.

Under the Career-Access Program \$642,813 was spent during the fiscal year to create 119 jobs for both native and non-native northerners.

The Canada Works Program spent \$5.2 million to create 1,065 jobs for residents of the Yukon. Activities included construction of houses on and off reserves, building renovations and garage exteriors. Canada Works, under Section 38, was also involved in mine development and exploration.

Under the Job Corps Program, \$166,000 was spent during fiscal year 1983-84 to create 8 jobs.

The Local Employment Assistance and Development Program (LEAD) provided \$140,423 for the creation of 11 jobs during the year. LEAD set up projects in the Yukon to continue activities begun under LEAP such as the Yukon Native Production Centre which produced parkas and winter garments. It is expected that under LEAD similar successful projects will be funded. LEAP provided \$326,061 to create 33 jobs.

Training was a major priority. Under the National Institutional Training Program, the Commission purchased 38,400 training days from the Department of Education of the Government of the Yukon and started a total of 350 trainees in the program. Skill training was provided to 193 trainees and 115 people received academic upgrading. The Commission provided \$450,000 to purchase training courses specifically for Native people to enable them to take better advantage of available employment opportunities. Total expenditure was some \$2.6 million, including income support of \$0.9 million.

The Canada Manpower Mobility Program provided \$67,990 to relocate 41 residents of the Yukon, to provide exploratory travel for 35 people and to assist 2 people to travel to temporary employment.

Summer Canada funded 117 projects. These provided summer work for 341 students at a total cost of \$711,000. The Canada Employment Centre for Students operated from April to August. The Centre also provided advice on the preparation of résumés and techniques for successful job hunting.

### *Indian and Inuit Employment Assistance*

The Commission operates certain programs specifically for Native Canadians. The Native Internship Program, which creates summer employment for Native students in various offices of the Commission is one example. Two Native Employment Counsellors work in the Whitehorse CEC in the Yukon. A client services consultant in N.W.T. is responsible for the Affirmative Action Program.

Native Canadians are also served by Outreach, through which non-profit, private sponsors extend employment services to recognized target groups. Approximately 21% of Outreach funds for 1983-84 were devoted to Native sponsored Outreach projects in the two territories.

EIC's Affirmative Action Program provides a number of indirect benefits to Native Canadians. Through Affirmative Action, private sector companies enter into voluntary agreements with EIC to develop non-discriminatory hiring and promotion practices. Thirty-seven affirmative action agreements now exist, with Native Canadians as a target group, in Canada. While no full affirmative action agreements exist in either B.C. or Alberta which have direct impact on the North, negotiations with the major oil companies to implement Special Affirmative Measures are in progress.

CEIC has been working in concert with COGLA (Canadian Oil and Gas Land Administration) to ensure that Canadians receive maximum employment benefits from the exploration and development of petroleum resources on Canada lands. Specifically, CEIC is joining with COGLA in the negotiation of Canada Benefits plans which include special affirmative measures to provide employment and training opportunities for members of disadvantaged groups during the projects. Specific people, in particular, are benefiting from this approach.

Companies are now in the process of submitting their 1983 annual reports to COGLA and figures are not yet available. The following data summarizes activities for 1982:

#### *Mackenzie/Beaufort*

##### **Employment:**

Over 1,400 job opportunities were created by the combined programs of DOME, Gulf and Esso.

Approximately 1,330 or 95% of those positions were filled by Canadians and over 300 positions or 21% were filled by Northerners, of whom 240 were Native people.

##### **Training:**

Special Northern Training Programs were initiated in conjunction with federal and territorial agencies. An almost all-Canadian workforce is projected in the next 3 to 4 years.

#### *Mainland Territory*

##### **Employment:**

Approximately 900 jobs were created by various programs in place during 1982, over half associated with the Norman Wells project - almost all jobs were held by Canadians, of which 100 to 150 were Native Northerners.

##### **Training:**

Special Northern Training Programs are currently being developed at Norman Wells for Northerners, more particularly, for those of Native origin.

#### *Arctic Islands/Eastern Arctic Offshore*

##### **Employment:**

Drilling programs have generated 550 employment opportunities at peak in both regions. Of these, 84% or 460 were filled by Canadians. Approximately 60 jobs were filled by Native people.

##### **Training:**

A five-year apprenticeship program and institutional training program for Native employees was initiated in the Arctic Islands. Some on-the-job training was also provided for Native Northerners in the East-Arctic.

Seamanship and drill floor training was provided to Canadians in a plan designed to replace foreign workers. Employment opportunities in the East Arctic were limited by the seasonal nature of operations and by the chartering of a foreign drill vessel and supply boats prior to the negotiation of a Canadian Benefits Agreement with COGLA.

#### *Hudson's Bay*

##### **Employment:**

Some 34 positions were created by seismic programs, of which 10 were filled by Canadians.

Two Native people from the region were employed as wildlife observers.

# Energy, Mines and Resources Canada

## Mineral Policy Sector

### Economic Function: Economic Development (Other)

#### Responsibilities

The Mineral Policy Sector assists in the development of federal policies on mineral resources. It deals mainly with non-energy mineral resources and the contribution which these make to the economy.

#### Review 1983-84

Mineral Policy Sector northern activities involved special study groups comprising representatives of federal and territorial governments and industry, interdepartmental committees and conferences.

Reserves and production capability of Canada's nonferrous metal mines and exploration activities were monitored. Two documents on the results are publicly available: MR 191 Canadian Reserves as of January 1, 1981: Copper, Nickel, Lead, Zinc, Molybdenum, Silver and Gold; and, MR 197 Canadian Mines: Perspective from 1982: Reserves, Production Capability, Exploration, Development. Report on 1983 reserves and on the Perspective from 1983 will be available in early 1984.

The Mineral Policy Sector chairs the federal-Provincial Mineral Statistical Committee, which includes territorial government participation. It compiles and publishes annual mineral statistics, including those on northern mines. A statistical report entitled Production of Canada's Leading Minerals was also published.

With the Department of Indian Affairs and Northern Development, the Mineral Policy Sector has been involved in the valuation of problems in the northern mineral industry created by the depressed metal markets and prices in 1982.

Officers of the Economic and Financial Policy Analysis Branch participated in the study of the northern tax and royalty regimes.

#### Plans for 1984-85

The Sector will continue to gather data bearing upon northern mineral development. A commodity study on bentonite and possibly one on barite will be done. Advisory assistance will be given on issues, such as northern mineral policy, comprehensive native claims, and withdrawal of northern lands for parks. Along with Indian Affairs and Northern Development, the Mineral Policy Sector will continue to provide technical advice to the Canada Employment and Immigration Commission about job creation proposals and will inform the industry about the programs that are available. Policies being developed by the territorial governments and Indian Affairs and Northern Development affecting the non-energy minerals industry will be monitored.

## Canada Centre for Remote Sensing

### Economic Function: Economic Development (Other)

#### Responsibilities

The Canada Centre for Remote Sensing (CCRS) develops and co-ordinates a national program to produce remotely sensed data and to derive information for the management of Canadian natural resources. In recent years this activity has included a concentrated effort in support of northern resources exploration and extraction.

#### Review of Activities 1983-84

CCRS continued to develop remote sensing information systems to support petroleum exploration and delivery from Arctic waters. Present activity includes research on the use of aircraft-based microwave sensors needed to support exploration activities in the Beaufort Sea and on the Labrador Shelf. This same facility is also being used to determine mission profile requirements for a planned Canadian microwave satellite, RADARSAT, intended as the primary information source to support oil and liquified natural gas extraction and transportation from offshore Labrador and the Arctic. The Canadian RADARSAT program will provide, starting in 1990, complete coverage of the proposed Arctic transportation routes on a regular basis. The microwave sensors on this satellite will ensure all-weather all-year coverage of the Arctic regions because these sensors do not require sunlight for operation and can penetrate cloud.

A CCRS Convair-580 aircraft, equipped with a synthetic aperture radar (SAR) and a microwave scatterometer, was flown off the Labrador coast in the spring of 1983 and again in the early spring of 1984 as part of an experiment to determine the microwave signatures of icebergs. These activities are directed at determining the technical specifications of the sensors to be carried on the proposed satellite and on surveillance aircraft.

In a co-operative project with the Environmental Research Institute of Michigan, the Convair 580 was flown to Spitzbergen where data on sea ice signatures in the marginal ice zone were collected.

The Department of National Defence continued to collect infrared terrain signatures under a wide variety of Arctic conditions using the digital multispectral scanner mounted in the CCRS Falcon aircraft.

#### Plans 1984-85

In the early summer of 1984, the Convair 580 will again visit Spitzbergen to collect data sets on the marginal ice zone, as part of a major project to measure sea ice signatures.

CCRS aircraft will also collect airborne radar imagery of icebergs off the coast of Labrador in the fall of 1984.

## Canada Centre for Mineral and Energy Technology

### Economic Function: Short Range Research

#### Responsibilities

CANMET undertakes extensive research in the fields of mining, mineral processing, materials and energy technology. Certain aspects of projects relating to materials used for oil and gas pipelines, arctic vessels and offshore structures have a direct bearing on federal activities in the north.

### Review 1983-84

Research on steels for northern linepipe has concentrated on the increases in strength possible in current steels using on-line accelerated cooling during processing. Higher strength pipelines offer the potential of higher operating pressures with concomitant efficiency improvements. Research has recently begun on weld metal properties of large diameter pipeline fittings produced by the quench and temper route in order to produce matching fittings of similar strength to current linepipe. The magnetic properties of pipeline steels under stress have been studied with an objective of detecting macroscopic stress changes with time. Such stress changes might be anticipated at locations of generalized corrosion and earth movement, such as frost-heaves and washouts. A theory of magnetization effects through repeated stress cycles has been developed. Work is nearing completion on the degradation of linepipe steels carrying sour oil and gas. The results demonstrate the importance of the steel characteristics used to manufacture linepipe.

A series of propeller failures on icebreakers of the Canadian Coast Guard Service has led to the discovery that the impact properties of manganese-nickel-aluminum bronzes can be low in very thick sections of sand castings. A study is in hand to assess the effect of manganese and aluminum contents on impact toughness and determine whether an industrially useable heat treatment can be developed to improve resistance to fracture.

The research program on materials for offshore structures in Arctic environments has expanded in scope and activity. A cost-shared research program with industry on steels and concrete for offshore platforms is now in its second year of operation. In this program Canadian steel companies have produced special grades of tough weldable steel for ship and rig applications down to -45°C. CANMET sponsored a two-day study session on fracture toughness of steels for Arctic use at which draft standards for material selection for Arctic class ships were discussed. The in-house research on corrosion fatigue of welded joints for offshore platforms is being complemented by industry and university studies, and by collaboration with related U.S. and EEC programs. Low temperature fracture

toughness studies have been accelerated by the commissioning of a cold chamber (-1200°C) universal test machine for plate, weld, and heat affected zone toughness measurements.

Nantar Engineering Limited, Kingston, completed a contract on "The Behaviour of Frozen Backfill in Underground Mines" designed to determine significant physical and mechanical properties of frozen tailings when used as backfill materials in underground mines operating in permafrost regions.

### Plans for 1984-85

Research on northern linepipe and pipelines will include more work on on-line accelerated cooling with the installation of a custom facility on the rolling mill. Studies of ultrasonic pattern recognition and sizing to improve pipeline inspection capability and further development of stress detection by magnetic measurement will be done. A survey of acoustic holography as a defect detection technique will be undertaken. A lower heat input welding technique for mill welds designed to offer improved weld heat affected zone toughness for thick pipe will be examined.

The study on the cause and remedies for low toughness in bronze icebreaker propellers should be completed in 1984-85.

In the program on materials for offshore structures, reports are expected on the evaluation of consumables for shielded metal arc welding of offshore materials; on the effect of thickness on fatigue crack growth in T-joint specimens in air; on an improved ultrasonic technique for crack depth monitoring, and on the properties and weldability of 350 WT grade ship steels.

Research on the behaviour of frozen backfill in underground mines will be expanded. New work will include the long term testing of the physical and mechanical properties of material used as backfill in underground mines operating in permafrost regions.

## Geological Survey of Canada

### Economic Function: Research (Long Range)

#### Responsibilities

The Geological Survey of Canada:

- ensures the availability of comprehensive basic knowledge of the geology of the Canadian landmass, including offshore areas.
- acquires geological information on the nature, distribution and magnitude of our mineral and energy resources, and development of related exploration technology, as required for effective exploration of minerals and energy, estimation of the resource base of Canada and formulation of policies.
- identifies and assesses natural geological hazards, features, and processes that affect the environmental and ecological balance and that may constrain our use of the land, particularly association with resource exploration, development and utilization.

### Review 1983-84

Preliminary results of the 1983 field season (17 projects) were released in Current Research, Part A (January 1984).

Geological mapping at 1:250 000 scale was completed for 3 map sheets on southern Ellesmere and North Kent Island (NTS 59A, 49B, 49A) and maps completed as rough drafts. A large strike-slip zone was discovered in the Starnes Fiord area.

Mapping of several regions of structural complexity on Cornwallis Island and nearby smaller islands was refined. Parts of 5 NTS sheets will be compiled as single sheet centering on Cornwallis Island.

A good understanding of Mesozoic stratigraphy and sedimentology on western Axel Heiberg was obtained through detailed mapping. Salt diapirism occurred throughout the Mesozoic in the area.

Field work on Cretaceous volcanic rocks of the Sverdrup Basin was undertaken and the stratigraphy of the rocks revised.

Field studies on northern Victoria Island reveal a significant unconformity between Lower and Middle Devonian strata in the lateral equivalents of the Blueford Formation.

Preliminary age determinations were obtained in a regional surface-surface study of Carboniferous palynomorphs and conodonts from Ellesmere and Melville Island.

A preliminary report on mineral resource potential of the proposed Bylot Island-Borden Peninsula (Baffin Island) park area was completed and an assessment of oil and gas potential of the region was completed for incorporation into the final Bylot Island-Borden Peninsula report.

Studies of hydrocarbon source rock relationships have been completed for the Sverdrup Basin. The study showed that over-mature gas in the western Sverdrup Basin was vertically migrated from sites of salt-diapirism and igneous intrusion.

Petroleum geochemistry studies of offshore Mackenzie Delta wells have shown that in contrast to the Richards land are hydrocarbons have migrated to the current reservoir position from considerable depth.

A successful assessment of the resource potential of the Beaufort Sea was completed and reports on the Heiberg and Amundsen assessment in the Sverdrup Basin are in the final stages of preparation.

Drill hole temperature and seismic velocity measurements indicate the development of seasonal frost above the permafrost zone in shallow water areas of the Beaufort Sea. This has obvious significance for pipe line routing.

Preliminary results from landform investigations on Victoria Island show that primary (glacial) fabric is preserved on well drained sites less than one metre from the surface. This has important implications in the study and understanding of glacial landforms and the assumed intensity or pervasiveness of periglacial processes.

Geological mapping at 1:50 000 scale was completed for 3 sheets in the 105-0 (Nidderly Lake) map-area. An extensive decollement zone involving 1.5 km of stratigraphy and shortening to 20% of the original extent of these strata, was mapped across the entire northwestern part of the 105-0 map area (width over 80 km).

Field work in the northern Yukon resulted in a more detailed understanding of facies distribution within the gas-bearing Lower Cretaceous Parsons Group.

Major progress was made toward completion of a comprehensive ostracode zonation through Middle Ordovician to Middle Devonian rocks of the Mackenzie Mountains.

A detailed petrographic study of tourmaline-rich nodules in the Seagull batholith, Yukon Territory, suggests that they represent barium and fluoride-rich concentrations that accumulated prior to final crystallization of a highly differentiated granitic magma. Similar occurrences of such nodules are found in granitic rocks associated with tin deposits around the world.

A phase II (follow-up) report on the interpretation of geochemical and mineral occurrence data in the Mount Sedgwick area of the proposed Northern Yukon National Park was completed and is currently being prepared for Open File release.

Detailed lichenometric studies in the Frances Lake area (105 H) in the Yukon resulted in the delineation of two ages of rock glacier activity older than White River ash (1200 BP) and several younger periods of rock glacier activity and of morainic construction. These studies will eventually provide a much better understanding of the environmental record of southeastern Yukon.

Mapping and soil studies in the McQuesten area of the central Yukon confirmed that the degree of development of soils can be used as a criteria in identifying areas underlain by glacial deposits of different ages. In addition the degree of soil development can be used to correlate glacial deposits of the same age but associated with different glacial centres. The data obtained has made it possible to better define the age and history of Quaternary events in the area.

The major Quaternary sections on the Mainland south of the Beaufort Sea between the Yukon-Alaska border and the Baillie Islands were remeasured and materials were collected for paleoecological and paleomagnetic analyses and for dating. The information gained will be used to establish the basic Quaternary stratigraphic framework of the area where extensive parts were never glaciated. Also the results should provide a basis for correlating the Quaternary suites of sediments with those on adjacent Banks Island, the Yukon and Alaska.

Field components of two major projects and four associated theses were completed in the northern Wopmay Orogen between Great Bear and Great Slave Lakes. The previously defined plate tectonic model for the area was refined through structural studies that identified a tectonic "shingle" and the direction of movement on several faults, the recognition of low grade metamorphism of the sedimentary rocks and the comparison of the Rocknest carbonate formation with younger reef complexes.

Mapping in the northern part of the Tectonic Zone that marks the boundary between the Slave and Churchill Province boundary east of Bathurst Inlet revealed that extensive gneisses outlined by previous reconnaissance mapping were derived from Archean volcanic and sedimentary rocks.

Field studies of the Booth River complex, N.W.T. suggests the existence of pre-Goulbourn, post-orogenic mafic igneous activity. The previously undescribed southern rim of the Complex was examined, and rocks similar to those of the Complex and containing massive ilmenite was discovered 75 km to the west.

In the central Keewatin District, Aberdeen Lake map area and parts of Beverly Lake area were completed. Lower Proterozoic sedimentary sequences were defined and depositional environments and facies variations determined that suggest the sequence was an ancient passive margin sequence.

In the same region mapping of the Deep Rose Lake area was completed. Basement of Lower Proterozoic sedimentary sequences was mapped and both Archean? and Proterozoic granitoid gneisses and plutonic rocks defined.

Field studies (1983) in the McLeod Bay and Artillery Lake areas, NWT indicate that occurrences of Copper-uranium-lead mineralization are more numerous than previously documented. This has a bearing on the current resource assessment of the proposed East Arm-Artillery Lake national park.

Field work was conducted on the iron-formation on the Melville Peninsula to review results of company exploration (Borealis Explorations Ltd) and to investigate gold distribution in the iron-formation.

The depositional environment of the Deep Rose Lake (Keewatin) esker system was investigated in an attempt to find the source of trains of uranium-bearing boulders found on terraces and rogen moraine near the system. The esker proper was found to be flanked by later outwash terraces deposited over glacier ice which melted, causing most of the original terrace surfaces to collapse. A model for esker and outwash deposition resulted from this and earlier (1968) unpublished studies.

Co-operation between the Geological Survey of Canada and l'Université de Montréal has made possible the detailed study of a type section in a postglacial debris flow exposed in the lower Coppermine River valley, Northwest Territories. The results are expected to lead to a better understanding of the modes of emplacement of olisthostromes in modern and in older sedimentary environments. The study may also help define the nature of glacier related debris flows often referred to as "flow tills".

Publications of the Geological Survey of Canada released between 1 April and 30 March 1984 concerned with the Yukon Territory and Northwest Territories:

#### *Memoirs*

**Memoir 390**  
Geology of Amund Ringnes, Cornwall, and Haig-Thomas Islands District of Franklin; H.R. Balkwill, 1983 (Map/1471A).

**Memoir 401**  
Pre-Mesozoic geology in the subsurface of Peel River map area, Yukon Territory and District of Mackenzie; D.C. Pugh, 1983.

**Memoir 404**  
Quaternary geology of Somerset Island, District of Franklin; Arthur S. Dyke, 1983. (Map/1555A).

**Memoir 405**  
La géologie du Quaternaire et la géomorphologie de l'île Banks, Arctique canadien: Jean-Serge Vincent, 1983. (Carte/1565A).

#### *Bulletins*

**Bulletin 324**  
Structure and metamorphism of the Aphebian Penrhyn Group and its Archean basement complex in the Lyon Inlet area, Melville Peninsula, District of Franklin; J.R. Henderson, 1983. (Map 1510A).

**Bulletin 346**  
Precambrian geology of the Prince Albert Hills, western Melville Peninsula, Northwest Territories; Thomas Frisch, 1982. 70 p.

**Bulletin 359**  
The dinoflagellate *Oppel*-zonation of the Jurassic-Lower Cretaceous sequence in the Sverdrup Basin, Arctic Canada; E.H. Davies, 1983.

#### *Papers*

**Paper 82-9**  
Geology of Hyde Lake map area, District of Keewatin, Northwest Territories; J.A. Fraser; Map/1-1982.

**Paper 82-10**  
Reconnaissance geology of the Precambrian Shield of Ellesmere, Devon and Coburg Islands, Arctic Archipelago: a preliminary account; Thomas Frisch.

**Paper 83-9**  
A Pleistocene diatom assemblage from Ellesmere Island, Northwest Territories; Sigrid Lichti-Federovich. 59 p.

**Paper 83-31**  
Oil and natural gas resources of Canada, 1983; R.M. Procter, G.C. Taylor, J.A. Wadsworth.

**Paper 84-8**  
Current Activities Forum 1984: Program with abstracts. Forum des travaux en cours 1984: Programme et résumés.

**Paper 83-1B**  
"Current Research" contained 47 reports and 8 notes of which 23 were concerned with the North.

**Paper 84-1A**  
"Current Research" contained 82 reports and 10 notes of which 18 were concerned with the North.

#### *Open Files*

**Open file 845**  
Stream sediment and water geochemistry of the Howard's Pass (XY) Zn-Pb deposit and Nor Zn-Pb-Ba occurrence, Selwyn Basin, Yukon and Northwest Territories; W.D. Goodfellow.

**Open file 883**  
A preliminary geological map of Baker Lake, District of Keewatin, Mikkel Schau.

**Open file 932**  
Review of laboratory testing of permafrost; Komex Consultants Ltd., and GEOTECH Resources Ltd.

**Open file 942**  
Geology of the Amer Lake (NTS 66H) map area, District of Keewatin, Northwest Territories; S. Tella, W.W. Heywood.

**Open file 954**  
Development of a proposed model to account for the surficial geology of the southern Beaufort Sea; M.J. O'Connor and Associates Ltd.

**Open file 960**  
Sedimentology of Arctic Fjords experiment; HU 82-031 Data Report, Volume 1; J.P.M. Syvitski, C.P. Blakeney.

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rcupine project area, Yukon Territory  
d District of Mackenzie; D.K. Norris,  
1983.

ap 1546A  
ology/Géologie Echo Bay - MacAlpine  
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## Earth Physics Branch

### *Seismological Service*

## Economic Function: General Government Services

### *Responsibilities*

The Seismological Service determines the parameters of all significant earthquakes in northern Canada and offshore areas, and provides assessments of earthquake risk. Research is conducted on the structure and properties of the Arctic lithosphere by studying the velocities and dispersion of seismic waves from Arctic earthquakes. Studies of the source mechanisms of earthquakes in active seismic zones provide data for investigations of seismotectonic processes and for calculations required for the earthquake-resistant design of man-made structures. A network of seismograph stations is maintained in northern Canada, and field experiments are conducted on deep seismic sounding of the crust and lithosphere.

### *Review 1983-84*

Standard seismological observatories were operated at Alert, Mould Bay, Frobisher, Inuvik and Yellowknife. Seismic data acquired at these observatories for earthquakes world-wide, were relayed via Ottawa through a computer link to the National Earthquake Information Service in the United States. Regional observatories operated at Igloodik (with co-operation from the staff of the Igloodik Research Laboratory), Sachs Harbour, Shingle Point, Tuktoyaktuk, Nicholson Point and Komakuk Beach (initially in a joint venture with Dome Petroleum and later with OERD funding to monitor the seismicity of the Beaufort Sea), Haines Junction, Resolute, Whitehorse and Baker Lake. The Yellowknife seismological array continued operation, and the data transfer facility continued to send digital information on detected seismic events to a computer in Ottawa. The Yellowknife detection bulletin was transferred by a further computer link to research groups in the U.S. and U.K. In a co-operative project, the U.S. Department of Energy continued to operate a borehole seismograph near the Yellowknife array as part of the North American Regional

Seismic Test Network for the detection and location of underground nuclear explosions. Data were transmitted to the U.S. by satellite link; selected data were acquired by EPB on request for studies of northern Canadian earthquakes.

Routine analysis continued of all earthquakes detected in and near the Canadian North. Rapid determinations were made of earthquakes of special concern or scientific interest; quarterly lists of all earthquakes were prepared about six months after their occurrence; and final findings were published in Canadian and International catalogues.

Analysis of the Beaufort Sea seismicity continued, with emphasis on utilizing data from the additional monitoring stations (supported initially by Dome Petroleum and later by OERD) to assess the accuracy with which previous Beaufort Sea earthquakes have been located.

As part of the CESAR project (Canadian Expedition to Study the Alpha Ridge), the EPB collaborated with the Geological Survey (Ottawa) and the Atlantic Geoscience Centre in a crustal seismic refraction survey of the Earth underlying this part of the Arctic Ocean. The refraction program was very successful, with over 200 seismograms collected on 500 km of reversed profiles along and across the northern portion of the Alpha Ridge. Preliminary results were presented at the December '83 meeting of the American Geophysical Union in San Francisco and will be updated for the May '84 meeting of the Canadian Geophysical Union in Halifax.

### *Plans 1984-85*

The seismological observatories in the North and the Yellowknife seismological array will be maintained. These facilities will continue to contribute important data to Canadian and international research projects.

The analysis and publication of northern earthquakes will continue on a current basis. Large potentially-damaging earthquakes will be identified and reported as soon as possible. Detailed scientific studies of the larger northern earthquakes will continue as data and records become available. Special studies of seismicity and earthquake hazards will continue in regions of current and potential petroleum exploration in the northern offshore.

A seismic reflection experiment is planned for July 1984 on Devon Island. It will investigate the "Haughton Dome" structure known to be of meteorite impact origin. The experiment will involve cooperation between scientists from EPB, the University of Saskatoon, and Germany, and should yield valuable information about the structures formed at depth by the impact process.

A drifting ice island which separated from the Ward Hunt ice shelf in late 1982 is presently stationary offshore from Phillips Inlet on Ellesmere Island. The island's position on the surface of the Arctic Ocean has been monitored with a weather buoy and satellite link since August 1983. A proposal for an ice-island scientific program is currently being prepared in order to obtain seismic information about the Arctic continental margin which will be needed in support of Canadian sovereignty and to help assess opportunities for mineral and energy resource development.

#### *Geothermal Service*

##### **Responsibilities**

The Geothermal Service collects, analyses and disseminates information on the thermal regime of the Canadian landmass and offshore areas as related to geotectonics, permafrost, gas hydrates, geothermal energy potential and the thermal properties of materials. The data base generated comprises field measurements of subsurface temperatures, depths to the base of permafrost and the distribution of gas hydrates determined from well-logs, and includes laboratory measurements of the thermal and heat-generation properties of earth materials.

##### **Review 1983-84**

With support from the Federal Energy Research and Development Program, analyses were commenced through contracts to examine all existing well-logs collected in the course of exploratory hydrocarbon drilling for evidence of frozen material. In the initial contracts the mature data base of geothermal observations from 140 wells was used to develop interpretation procedures. The study of 161 sets of well-logs from the Mackenzie Delta has revealed permafrost thicknesses ranging from 0 in the western Mackenzie Canyon area to as much as 740 m in the northern onshore Mackenzie Delta. Between longitudes 129°W and 136°W the majority of the onshore and most of the Beaufort Sea Shelf are underlain by permafrost with thickness in excess of 600 m. Gas hydrates occur in about 20% of the wells and persist to depths greater than 1200 m. In contrast to conditions in the Mackenzie Delta, permafrost exceeds 800 m in thickness in parts of the Arctic Islands and gas hydrates persist to depths of 2000 m. The gas hydrates are also much more pervasive, occurring in over half the 154 wells examined. Too few wells have been drilled in the north to determine more than regional variations in permafrost thickness; no information on the local topography of the permafrost base is revealed.

Using local wells to provide interpretative control, a new treatment electromagnetic sounding system has been successfully tested at two locations in the Mackenzie Delta and on the Sabine Peninsula on Melville Island in the High Arctic. The results are currently being evaluated prior to further field investigations.

To complete the necessary data collection for the study and analysis of geothermal conditions in the north, the depth-limited precise subsurface temperatures measured in preserved exploratory wells were augmented by less precise bottom-hole and formation temperatures collected by industry to depths of 4 km. Again the results illustrate the dramatic contrasts between the Mackenzie Delta-Beaufort Sea area and the Arctic Islands. Temperature gradients in the Mackenzie Delta vary between only 20 and 40° C/km whereas Arctic Island gradients vary from under 10 to over 50° C/km.

Studies and monitoring of a number of widely separated sites in the north have continued either internally or through contracts at Illisarvik, Alert, Mayo and Schefferville. With the commencement of the Norman Wells-Zama Lake oil pipeline an additional 12 sites are being established jointly with DIAND and Interprovincial Pipeline Limited along the proposed right-of-way. These sites span a distance of 800 km from discontinuous permafrost at Norman Wells to the southern limits of ground ice occurrence. They will thus present ideal long-term monitoring sites at which to study the interaction of climate and permafrost as well as the impact of the right-of-way and the pipeline. Controlled experiments on the freezing and thawing of soils around pipelines have continued jointly with Foothills Pipeline Limited at the Calgary Test Loop and with Carleton University and CNRS at the Caen facility in northern France.

The Service participated in the multidisciplinary CESAR 83 project in the spring of 1983 during which 12 determinations of the temperature gradient in the ocean-bottom sediments were made along with 800 measurements of thermal properties of the sediments. The moderate to low terrestrial heat flow measured has confirmed the non-thermal origin of the current topographic high of the Alpha Ridge beneath the Arctic Ocean.

##### **Plans 1984-85**

The Geothermics programme will, as personnel resources permit, continue its efforts to keep pace with the rapidly increasing demands associated with northern development, and to carry out important research on future energy resources and on fundamental studies of processes in permafrost terrains and of Arctic tectonics. Further efforts will be made to fill gaps in the thermal information base, particularly in the offshore where a new system for offshore-well instrumentation is being developed and tested with EBA Engineering Associates, Dobracky-Seatech and Panarctic Oils.

Several additional contracts are continuing to collect information on permafrost and gas hydrates from an interpretation of whole well-logs, surface geophysical surveys and other data from industrial sources. Over the next several years these activities will complete several regional syntheses of the distribution of permafrost and gas hydrates and of the geothermal regime in relation to Arctic tectonics.

During the forthcoming year the extensive organization and planning of monitoring sites along the Norman Wells-to-Zama Lake pipeline should come fruition as monthly monitoring of ground temperatures at six of the sites commences and as the surface impact of the first winter's construction is monitored.

#### *Geomagnetic Service*

##### **Responsibilities**

The Geomagnetic Service provides information on the direction and intensity of the earth's magnetic field over Canada and adjacent ocean regions. It publishes magnetic charts of Canada and provides information for many other maps, including nautical and marine charts, concerning the angle between true north and magnetic north ("magnetic declination") and its change from year to year. The Service provides information on the structure of the earth's crust and reference fields for the interpretation of the detailed commercial surveys carried out in exploration for minerals, oil and gas. The magnetizations acquired by rocks at the time of their formation and during their subsequent history are analysed to learn when and how geological structures were formed. A network of magnetic observatories is maintained in northern Canada, and field experiments are conducted on deep electromagnetic sounding of the crust and lithosphere.

##### **Review 1983-84**

Magnetic observatories operated continuously through 1983-84 at Alert, Mould Bay, Resolute, Cambridge Bay, Baker Lake and Yellowknife. Recording of magnetic variations in digital form continued at Igloolik, where the equipment is operated by personnel of the Department of Indian Affairs and Northern Development. Analysis of magnetic observations recently acquired at three sites originally occupied during the First International Polar Year (1882-83) has provided a better understanding of magnetic field changes in the Arctic over the past 100 years. Magnetic declination has increased easterly by over 20° at Clearwater Fiord and Fort Conger and decreased by 9° at Fort Rae. A decrease in total field intensity was found at all three locations, but this reduction is substantially less than that observed at lower latitudes in North America. Magnetic repeat stations were re-occupied at Fort Chimo and Frobisher Bay.

Paleomagnetic sampling in the Arctic Islands continued with the collection of Permian and Cretaceous specimens from Axel Heiberg Island. The Permian rocks reveal a 35° counter-clockwise rotation in the NE Sverdrup Basin and the Cretaceous samples provide information about the Cretaceous Quiet Zone of normal polarity. Preliminary interpretation of magnetotelluric data from Project CESAR indicates the presence of a highly conducting layer at a depth of about 90 km beneath the Alpha Ridge which may be associated with partial melt in the asthenosphere.

##### **Plans 1984-85**

The six magnetic observatories will operate throughout 1984-85. In the continuing program of secular change studies, magnetic repeat stations will be re-occupied at Ennadai Lake, Coral Harbour, Tyrell Lake, Whitehorse and Dawson. Eight additional stations will be occupied in the central Arctic Islands in a special survey to relocate the exact position of the North Magnetic Pole. Paleomagnetic analysis of rock units sampled in the Queen Elizabeth Islands will continue as will interpretation of the magnetotelluric data collected at CESAR. Planning will proceed for deep-sounding magnetotelluric experiments to be included in the program of geophysical observations from the drifting ice island currently located off the northern coast of Ellesmere Island.

#### *Gravity Service*

##### **Responsibilities**

The Gravity Service has the responsibility for completing the regional gravity survey of the Canadian landmass and offshore regions. In the far North, this work is performed in co-operation with the Polar Continental Shelf Project of EMR. Precise measurements of gravity provide basic data for the mineral and exploration industries, for studies of sedimentary basins and for studies of the earth's crust and upper mantle. In addition, these observations provide data for geodetic studies and meet a need of the Department of National Defence. The Service is responsible for establishing gravity standards throughout Canada by maintaining a first-order network of gravity stations to serve as reference and control points for all regional and detailed gravity surveys. Also, the Service maintains a data bank of all gravity data which meet national standards.

##### **Review of 1983-84**

As part of the CESAR 83 project and in co-operation with the Canadian Hydrographic Service and the Polar Continental Shelf Project, 1307 bathymetric and gravity stations were established: 861 stations over the Ellesmere Island continental shelf from the coastline to the 1000 m isobath at a 6 km grid interval, and 446 stations over the Alpha Ridge from the 1000 m isobath seawards at a grid interval varying from 10 to 20 km. In addition 303 stations were established along the drift track of Ice Station CESAR. These data have been combined with older US data, mainly from drifting Ice-Island T-3, for the compilation of bathymetric and free-air gravity maps of the Alpha Ridge.

##### **Plans 1984-85**

1. As part of a Lithoprobe experiment proposed for a corridor straddling the Dempster Highway, a helicopter-supported gravity survey will be carried out in a 100 km wide swath between Dawson City, Yukon and Ft Macpherson, N.W.T. The work will include horizontal and vertical positioning by the Geodetic Survey of Canada, using inertial surveying methods. The survey will also attempt to complete a narrow reconnaissance profile from the Highway to the vicinity of Old Crow.

2. In co-operation with Polar Continental Shelf Project and the Canadian Hydrographic Service, a two-year program of regional reconnaissance gravity measurements will begin in March 1984 in Prince Regent Inlet/Gulf of Boothia, the channel between Baffin and Somerset Islands.

3. As part of the concluding phase of gravity observations at points of precisely-known elevation, in support of work done the Geodetic Survey of Canada, a contracted survey will measure gravity at selected lines of geodetic bench marks in the Yukon and the N.W.T.

#### *Geodynamics Service*

##### **Responsibilities**

The Geodynamics Service of the Earth Physics Branch is responsible for the operation of facilities to monitor earth rotation, the motion of the poles and the stability of the Canadian landmass, and to conduct research into the dynamics of the earth. The Service uses precise gravity measurements and positioning via satellite-based radio systems to monitor movements of the earth and, in the North, motions of the ice pack and ice islands. The Service is also investigating the use of mobile radio telescopes and satellite-receiving equipment to obtain positions and relative motions accurate to a few centimetres over distances of the order of 1000 km. The evaluation of results contributes to an understanding of large-scale strain in the earth and of processes associated with natural or induced earthquakes.

##### **Review 1983-84**

As part of the CESAR 83 project, specialized equipment was assembled and computer software developed to facilitate precise positioning of drifting ice stations using the U.S. Navy Navigational Satellite System (NAVSAT). A mini-computer was used for real-time data acquisition, and dynamic multi-station Doppler data reduction provided three-hour means of station positions and linear velocity with an average error of about  $\pm 15$  m in horizontal coordinates,  $\pm 0.2$  m in height and  $\pm 10$  m/hour in velocity. Ancillary data on the precision of radio navigation systems (OMEGA, DECCA), meteorological parameters and local sea-ice dynamics were also collected.

Plans were developed for high-precision positioning in support of scientific programs and logistic operations during an ice island project. Additional requirements for monitoring sea surface topography, ice dynamics and ground tracking of special-mission satellites over northern Canada and the Arctic Ocean were identified.

As part of the Canadian participation in the NASA Crustal Dynamics Project, sites were prepared in Yellowknife and Whitehorse where NASA mobile systems will carry out measurements on an annual basis. The measurements are designed to detect small movements of the sites with respect to other points in the U.S. and Canada for the purpose of understanding the on-going large-scale deformation of the Earth's surface. Vertical and horizontal control networks were established around the Whitehorse and Yellowknife sites by the Geodetic Survey of Canada.

##### **Plans 1984-85**

NASA mobile systems will carry out the first observations at Whitehorse and Yellowknife in August 1984, as part of the NASA Crustal Dynamics Project. A radio telescope will be set up at each site for approximately one week, in phase 1 of a four-year program of repeated measurements at each site.

The Yellowknife area will be studied as a potential site for a large (25-32 m) radio telescope to be located at high latitude for global geodetic, geodynamic and astrophysical research as part of a proposed Canadian Long Baseline Array.

If resources are approved for an ice-island scientific program, a start will be made on the acquisition and assembly of necessary equipment and on the development of software. This would permit precise tracking of the motion of the ice island now drifting off the northern coast of Ellesmere Island, and would provide positioning support for other experiments conducted from the island.

#### **Surveys and Mapping Branch**

##### **Economic Function: General Government Services**

##### **Responsibilities**

The Surveys and Mapping Branch provides geodetic, topographic and geographic information on the Canadian landmass through the production and distribution of maps, aeronautical charts, aerial photographs, the National Atlas of Canada, the Canada Gazetteer Atlas and gazetteer of place names. The Branch ensures that national, provincial and territorial boundaries are correctly positioned, marked and maintained. Surveying Canada Lands (national parks, Indian Reserves and territorial lands) is an added responsibility of the Branch. Scientific and technical support is provided to other federal and provincial government departments and agencies.

The Branch has seven units: Branch Headquarters, Geodetic Survey Division, Legal Surveys Division, Topographical Survey Division, Reproduction and Distribution Division, the International Boundary Commission and Geographical Services Division.

The Branch Director-General is Chairman of the Interdepartmental Committee on Air Surveys and the Coordinating Committee on Offshore Surveys. The Branch also provides the secretariats for the Canadian Council on Surveying and Mapping and the Canadian Permanent Committee on Geographical Names.

##### *Geodetic Survey Division*

##### **Responsibilities**

The Geodetic Survey maintains and extends national survey networks to meet the needs of the provinces, industry and other federal agencies. These surveys are used for engineering and natural resource development, environmental studies, national security and national mapping. In addition, they form part of the larger North American Continental reference system.

## Review 1983-84

High precision trilateration networks were measured at Whitehorse, Y.T. and at Yellowknife, N.W.T. to monitor the possible movement of Long Baseline Interferometry stations at these sites. Special order levelling was also used to provide precise elevations at these two locations.

Precise level lines were run from Fort Nelson, B.C. to Fort Simpson, N.W.T. and from Fort Norman, N.W.T. to Fort Franklin and from Great Bear Lake to Coppermine. This latter portion is a winter project, presently underway, and may continue into April 1984. Precise water level transfers were made across Great Bear Lake between Fort Franklin and Ennis Bay to form part of the Fort Norman Coppermine line, and also across Great Bear Lake between Yellowknife and Hay River. These two water level transfers are presently being analysed and evaluated.

Extensive satellite Doppler and other forms of mapping control were established in the following regions:

Arctic Coast; 73 new Satellite Doppler stations in the Coronation Gulf area between 94° and 114° longitude, and seven new points in the Paulatuk, N.W.T. area. In addition, 70 photo-identifications, 20 vertical ties to see level and six conventional angle and distance measurements were made. Fixed-wing aircraft support was supplied by the Polar Continental Shelf Project.

Northwest Territories; 26 new Satellite Doppler points were established. In addition, 33 elevations were determined by barometer and 26 points were photo-identified.

Yukon; Mapping control was established consisting of 7 new Doppler points, 105 trigonometric heights and 21 photo-identifications.

Baffin Island (south); 61 altimeter elevations were determined.

Support was provided to Project CESAR in the form of one surveyor and five Doppler receivers.

## Plans 1984-85

Precise levelling is planned in the Yukon from Whitehorse to Carmacks and on to Stewart Crossing. This is needed to revise levelling and to strengthen the network.

In the Yukon and Northwest Territories satellite Doppler positioning will be used to provide added density to the primary framework; about eighty primary points will be positioned. In addition about twenty-five to thirty astronomic deflection points will be observed as additional data needed for geoid-ellipsoid computation.

Inertial Survey (ISS) work is scheduled for the Dempster Highway corridor, - about 5400 km of traversing, and an additional 1600 km of ISS work on other Yukon roads. A further 800 km of ISS traversing is planned for Victoria Island to complete work started in 1980.

Satellite Doppler work is scheduled for the Dempster and Campbell Highways, the Canol and Nahanni Range Roads, and in some settlements. This work will be undertaken to upgrade existing control, to support national mapping and to provide general densification. Additional mapping control will be established in the Hudson Bay, Hudson Strait and Foxe Channel region of the Eastern Arctic.

## Legal Surveys Division

### Responsibilities

The Division, through its Regional Offices in Whitehorse and Yellowknife, is responsible for surveys carried out for land and resource transactions in connection with the development and administration of public and other lands in the Northwest and Yukon Territories. It also ensures the accuracy of surveys, land descriptions and plans of survey prepared under the Canada Lands Surveys Act and other applicable Acts and regulations. The federal responsibilities regarding the definition, survey and maintenance of provincial and territorial boundaries in Canada are delegated to and discharged by the Division. It also provides survey related advice and assistance to local government officers and the public as required.

## Review 1983-84

### Yukon Territory

- For the Northern Affairs Program of the Department of Indian and Northern Affairs (INA), four contracts involving the resurveying of placer baselines in Yukon were managed by this office; in addition, divisional staff did a control survey to tie various placer baseline surveys together;
- For the Indian and Inuit Affairs Program of INA, three survey contracts were managed as well as six photomapping contracts.
- As part of the regulatory function, the Division examined 70 survey plans, issued 65 sets of survey instructions, and monitored or field inspected eight surveys.

### Northwest Territories

- For the Northern Affairs Program three cottage subdivision survey contracts were managed in addition to the ongoing consultation service on surveying and mapping matters throughout the year;
- For the Indian Affairs Program one contract for large scale photomapping was managed as well as property overlay work on ten communities having native interests;
- As part of the Regulatory function, the Division examined 85 plans and issued 75 sets of survey instructions which was complemented by 14 field inspections;
- In developing liaison and communications with other government departments, the Regional Office developed and printed a land information directory and conducted meetings related to land information management and cooperation with 14 other government agencies in the N.W.T.

## Plans 1984-85

### Yukon Territory

The activities for the coming fiscal year will concentrate principally on surveys for the Department of Indian and Northern Affairs.

### Northwest Territories

Similar I.N.A. activity is planned for the coming year with continued development of a comprehensive land information system for the N.W.T. in cooperation with other Federal and Territorial Agencies.

### *Topographical Survey Division*

#### **Responsibilities**

To produce and maintain topographic maps of Canada for general purposes at scales of 1:250 000 and 1:50 000, to satisfy the needs of resource development, regional and urban planning and development, environmental management, engineering construction, national defence, and recreation; to provide technical advice to the Canadian International Development Agency and other government departments and agencies on mapping projects, and to provide technical and administrative support to the Interdepartmental Committee on Air Surveys.

#### **Review of 1983-84**

In 1983, a total of 12 242 km of aerial photography was flown in the North for 1:50 000 mapping. Indexes showing present status of aerial photography may be obtained from the National Air Photo Library, 615 Booth Street, Ottawa, Ontario K1A 0E9. Topographic map indexes are available from the Canada Map Office, 615 Booth Street, Ottawa, Ontario, K1A 0E9.

In the North, 201 new 1:50 000 maps were completed and 22 maps at the 1:250 000 scale were overprinted with revisions. In northern Canada, 32 maps were revised by the addition of data loaded by LANDSAT (land satellite) imagery.

#### **Plans for 1984-85**

It is anticipated that 230 new 1:50 000 map sheets of areas in northern Canada will be produced by Topographical Survey during the coming fiscal year. This figure includes maps produced in-house and those done under contract.

In 1984-85 the only aerial photography contract will be for the identification of horizontal and vertical control targets on Ellesmere Island.

### *Reproduction and Distribution Division*

#### **Responsibilities**

The Reproduction and Distribution Division is responsible for the photo-mechanical, phototypesetting, lithographic printing and bindery services for the Surveys and Mapping Branch's mapping products and provides reproduction support services to other federal and provincial government departments and agencies, municipal and private sector users, on a cost recovery basis, through the Map Reproduction Centre.

It is also responsible for the storage, retrieval, mail order sales and distribution of all topographical and thematic maps, aeronautical charts and publications and related air information produced by the Surveys and Mapping Branch and specialized maps acquired from other federal government departments, through the Canada Map Office (CMO). CMO also maintains and supports an authorized topographical map and aeronautical chart dealer network throughout the world.

The National Air Photo Library (NAPL) is responsible for the indexing, archiving, retrieval, sale and distribution of products and information related to federally owned or controlled aerial survey, airborne remote sensing and satellite imagery. The NAPL Reproduction Centre processes the film, reproduces the imagery and is custodian of the original material.

#### **Review 1983-84**

The Division printed 177 line maps and 12 photomaps at varying scales for the National Topographic Map Series as well as general purpose small scale maps. Map and chart indexes were also printed for all published maps and charts. A total of 84 Aeronautical Charts were printed. This series includes Canada Pilotage, Enroute, Visual Navigation, Plotting and Joint Operations Graphic Air Charts. The Division printed 12 geological maps for the Geological Survey of Canada. Printing services were provided to Environment Canada for the publication of 24 maps of the Northern Land Use Information Series, and to the Canadian Hydrographic Service of Fisheries & Oceans for the printing of 17 charts of Northern Waters.

The Canada Map Office received 178 requests from the Yukon Territory and 228 requests from the Northwest Territories. This resulted in shipments valued at \$42,425 forwarded to the Yukon Territory, and \$98,673 to the Northwest Territories.

Requests for air photo products and services included 35 requests valued at \$11,652 from the Yukon Territory, and 35 requests from the Northwest Territories valued at \$8,695.

#### **Plans 1984-85**

The Map Reproduction Centre will continue to provide reproduction and support services in 1984-85. The numbers of items to be printed and services to be provided will depend on user requirements.

### *International Boundary Commission*

#### **Responsibilities**

The work of the Commission is largely one of boundary maintenance and regulation works within 3 metres of the boundary. The Commission also determines the position of the boundary should questions arise between the governments of Canada and the United States.

#### **Review 1983-84**

There was no boundary maintenance required for that part of the boundary north of 60°.

#### **Plans 1984-85**

There are no planned operations in the North for the fiscal year 1984-85.

### *Geographical Services Division*

#### **Responsibilities**

The Division is responsible for the design and production of small scale maps, The National Atlas of Canada, aeronautical charts and flight information publications, toponymic (geographic names) service; and the provision of cartographic support and advice services to federal and provincial departments and private agencies.

### **Review of 1983-84**

National Atlas of Canada map on electricity generation and transmission is completed and 10 other Atlas maps are being prepared for printing. All maps include coverage of Canada's northern areas up to the North Pole. Eight maps showing the status of geodetic control networks in Canada were updated. The base maps of the Yukon and Northwest Territories, MCR 36 (English) and 36F (French) were revised to conform with current language policies.

Cartographic support to other government departments included, 24 Northwest Territories Electoral District maps; 4 Northern Electoral District maps; final reports to Parliament on the distribution of federal ridings; 16 maps of the Royal Tour of the Prince and Princess of Wales; 2 maps on Arctic Canada; 2 Medical Facilities maps and a map of Indian and Inuit Communities in the Yukon and Northwest Territories at a scale of 1:4 Million. All maps included northern Canada in whole or in part.

Toponymic services included a reprint of the Gazetteer of Canada-Northwest Territories, as well as geographic names support for the production of 244 National Geographic Series maps of Northern Canada.

Aeronautical Charting activity for pilots flying under Visual Flight Rules (VFR) of the Canadian North during 1983-84 included the production of 5 new and 19 revised charts at the scale of 1:500 000 and 15 at the scale of 1:100 000.

Chart revision activity for pilots flying under Instrument Flight Rules (IFR) included the following products revised on indicated cycles: High and Low Altitude Route Radio Navigation Charts (56 days), Supplement (56 days), Northern Supplement (56 days), Water Aerodrome Supplement (12 months), Canada Air Pilot Endments (28 days), Designated Air Traffic Handbook (112 days), the Flight Planning and Procedures Publication (6 months), and the Polar Plotting Chart (12 months). All the foregoing publications are portions pertaining to flight in the Canadian North.

### **Plans 1984-85**

Division plans for the production of maps, charts and publications with Northern Canada coverage include 6 general purpose base maps of Canada at various small scales, 20 National Atlas maps, 12 Visual Flight Rules (VFR) chart revisions, 2 new large format 1:500 000 scale charts and the normal revision publication cycles of the Instrument Flight Rules (IFR) products.

### **Polar Continental Shelf Project**

#### **Economic Function: Short Range Research**

##### **Responsibilities**

The Polar Continental Shelf Project (PCSP) is responsible for conducting scientific investigations unique to the Arctic and maintaining and improving logistical support systems for science in the Arctic. This latter responsibility demands the provision and maintenance of base camps, a radio network and aircraft with experienced crews. PCSP supports research in disciplines within the mandate of EM&R and other government departments. Field resources of the branch are also made available to approved university and other non-government research projects.

##### **Review 1983-84**

Field work, carried out from mid-February to late September, was co-ordinated from Tuktoyaktuk in the Mackenzie Delta and from Resolute on Cornwallis Island.

A total of 181 scientific parties were supported in the Arctic by PCSP in 1983. The most ambitious project in 1983 in the Arctic was CESAR - Canadian Expedition to Survey the Alpha Ridge. Geological, geophysical and oceanographic investigations of this Arctic Ocean bottom feature were carried out in March, April and May from a camp established on an ice floe. The runway adjacent to the floe was carved out of the pressure ridges by the Engineer Regiment from C.A.F. Base Petawawa. The annual bathymetry/gravity survey was conducted on the north coast of Ellesmere Island using a Decca Navigation System established for the purpose; this survey was tied into CESAR by an extensive corridor of data. The program of physical oceanographic research in the Northwest Passage was

continued as were similar concentrated efforts in Barrow Strait. The archeological, wildlife and geological parties continued to gather baseline data prior to any industrial development in the area.

The following agencies were supported in their Arctic research in 1983 by the Polar Continental Shelf Project:

Arctic Institute of North America  
British Joint Services Expedition  
Defence Research Establishment Pacific  
Department of Communications  
Department of Energy, Mines & Resources  
Department of the Environment  
Department of Fisheries & Oceans  
Department of Indian Affairs & Northern Development  
Government of the Northwest Territories  
Government of the Yukon  
MacInnis Foundation  
National Museums of Canada  
National Research Council  
Prince of Wales Northern Heritage Centre  
Sir Sandford Fleming College  
Transport Canada

##### **Universities:**

Alberta  
British Columbia  
Calgary  
Guelph  
Lakehead  
Manitoba  
McGill  
McMaster  
Ottawa  
Toronto  
Trent  
Victoria  
Washington  
Western Ontario  
York

The following is a summary of work to which PCSP contributed support:

*Archaeology:* Mackenzie Delta Heritage Project, Mackenzie Delta  
*Investigator:* C.D. Arnold, Government of the Northwest Territories

The Mackenzie Delta Heritage Project was initiated in 1983 with three objectives: to conduct rescue archaeological operations at eroding archaeological sites in the lower Mackenzie Delta; to obtain information on the origin of Mackenzie Inuit culture and its development through time; and to provide archaeological field training to northern residents. Archaeological investigations focussed on the Cache Point site near Cabin Creek on the southeast coast of Richards Island. Test excavations have revealed that architectural details and other cultural remains are well preserved by permafrost and overburden. Dates for the occupation at the site are estimated at 500 – 600 years B.P.<sup>1</sup>

The field school component of the project provided training in archaeological theory and procedures to three students from Inuvik, Fort Smith and Eskimo Point.

*Archaeology:* Northern Cultural Heritage Society, Stanwell-Fletcher Lake, Somerset Island  
*Investigator:* E. Bielawski, Prince of Wales Northern Heritage Centre

The final phase of a four-year project was completed. The research strategy of the excavation combined the collection of samples, which address problems concerning the nature of the inland portion of the Paleo-Eskimo seasonal round, adaptive response through time to a changing environment at a single location, and the post-depositional history of Paleo-Eskimo remains on gravel beaches.

Concurrent with the site excavation was the fifth season of the operation of the Northern Cultural Heritage Project, a field school and employment opportunity for young Northwest Territorial residents. Eight Inuit students from six communities (Spence Bay, Arctic Bay, Cape Dorset, Eskimo Point, Pangnirtung and Baker Lake) participated.

*Archaeology:* Paleoeskimo Settlement Patterns, Southeastern Ellesmere Island  
*Investigator:* E.R. Damkjar, University of Alberta

This project is an archaeological investigation of Paleoeskimo settlement patterns along 150 km of biologically and physiographically diverse coastline between Bellot Strait and Creswell Bay. Settlement patterns are studied on three levels: the individual house or structure; the manner in which structures are spatially arranged within communities; and the distribution of communities over the landscape. A variety of ecological and cultural factors will be considered. A second objective is to better understand Paleoeskimo culture historical developments in the area.

The survey resulted in the discovery of 120 previously unknown sites of which at least 37 are Paleoeskimo. The remainder are mostly later Thule or Inuit sites, while a few are of indeterminate affiliation. Preliminary data indicate occupation of the area from early to late Paleoeskimo times.

*Archaeology:* Archaeological Excavations, Navy Board Inlet  
*Investigator:* G. Mary-Rousselière

Approximately ten square meters were excavated at Saatut II and 279 artifacts were collected. At Nunguvik, investigations were concentrated on house complex N73. The excavation of two square meters begun in 1982 was completed. At N73, 487 artifacts were found.

After several seasons of excavation at Saatut, it can be said that most of the salvage work has been accomplished. Since the time of its discovery in 1967, several thousands of artifacts have been found. At Nunguvik, house complex N73 remains as puzzling as ever, on account of the prolonged occupation of the site. The earliest date recorded is A.D. 15 (A few harpoon heads support this date). It seems that the main occupation, including the construction of most of the stone structures, took place between the 5th and the 7th century A.D. But, for some reason, the Dorset people continued to occupy the same spot for a long time afterwards, and some Thule artifacts can even be found at the upper levels.

*Archaeology:* Prehistory of the Eureka Upland, Axel Heiberg and Ellesmere Islands  
*Investigator:* P. Sutherland, McMaster University

"The Prehistory of the Eureka Upland" is a long-term project designed to investigate the prehistory of the coastal and interior regions of Ellesmere and Axel Heiberg Islands. The broad objectives are firstly, to provide a more complete culture history of the region; secondly, to investigate the nature of the various culture occupations of the region by examining the types of technology used; and thirdly, to formulate and examine questions relating to culture continuity and changes over the last four thousand years.

Preliminary findings suggest that it may represent a transitional site in terms of the Independence I and later Paleoeskimo occupations.

The artifactual and faunal remains and the other cultural data collected during 1983 are presently under study. A permanent exhibit is being constructed for the prehistory of the Eureka Upland for display in Grise Fiord.

*Archaeology:* Devon Island Archaeology Project, Truelove Lowland, Devon Island  
*Investigator:* J.W. Helmer, University of Calgary

Limited test excavations have demonstrated excellent faunal preservation in parts of the Truelove Lowland. Also, data recovered from QKhn-13 indicates the possible presence of a very early stage of the Arctic Small Tool tradition in the study area. The significance of this is twofold: the identification of an occupation with Independence I affiliations greatly alters initial interpretations of the local culture sequence of north Devon Island and perhaps, more importantly, the discovery of this complex provides extended time depth for the comparative analysis of Paleoeskimo subsistence strategies in the region.

(1) B.P. Means "Before Present".

**Project:** Rat River Charr Project,  
Rat River, Mackenzie  
Delta  
**Investigator:** D.V. Gillman, Fisheries &  
Oceans

fish fence and trap operation was  
conducted on the Rat River to enumerate  
spawning migration of Arctic Charr and  
obtain biological data. Information was  
gained on the fecundity and spawning  
cycles for the Rat River population. In  
addition, a preliminary study was initiated  
on PN<sup>1</sup> disease; results indicate a high  
prevalence of the disease. A further study  
will be conducted to establish the infestation rate among  
northern coastal charr populations and  
determine the possible negative effects of  
the disease to resident fisheries in the Rat  
River - Big Fish River areas.

**Project:** Beaufort Sea  
Experimental Fishery,  
Beaufort Sea  
**Investigator:** D.V. Gillman, Fisheries &  
Oceans

A total of 12,500 lbs. of pacific herring were  
harvested as a commercial test fishery. The  
fishery, suitable for roe extraction, were  
harvested out to the Inuvik Fish Plant for  
processing. Six local fishermen were  
contracted to conduct the fishery through  
breaking ice and to observe the  
techniques of the roe fishery. Additional  
research defined spawning habits and  
population dynamics of the pacific herring  
in the region.

**Project:** Fisheries Survey Field  
Report, Melville  
Peninsula, Southampton  
Island  
**Investigator:** B. Stewart

Fish, collected using gillnets in lakes and  
streams and hoop and trap nets in streams,  
were weighed and measured in the field.  
Samples were removed for aging, and  
stomach contents and parasite loads were  
examined, preserved and returned to the  
laboratory for detailed analysis. Samples of  
zooplankton, phytoplankton, aquatic  
invertebrates, and water were also taken  
for laboratory analysis. Residents were  
interviewed to obtain information on fish  
distributions and domestic and  
commercial fisheries. Trout and charr on

northern Melville Peninsula were heavily  
infected with *Diphyllbothrium* sp., a  
tapeworm which will infect man if the cysts  
are ingested without proper cooking.

**Biology:** Entomology,  
Tuktoyaktuk Peninsula,  
Canoe Lake  
**Investigator:** R.A. Ring, University of  
Victoria

Overwintering mechanisms vary greatly  
within Hymenoptera. Tenth-redinidae are  
freezing-tolerant. All parasitoid species  
examined are able to supercool; however,  
internal parasitoids are freezing-tolerant  
with their freezing being initiated by host  
freezing. The external parasitoids  
overwinter in a supercooled state and are  
freezing-intolerant in general.

A study of Trichoptera fauna near  
Tuktoyaktuk reveals species which are  
derived post-glacially from Beringia (54%),  
south of the ice sheets (23%) or from both  
areas (25%). Nine species (43% of the total  
fauna) are as yet undetermined.

**Biology:** Zoology - Entomology,  
South British Mountains  
**Investigator:** G.G.E. Scudder,  
University of British  
Columbia

A thorough study of the dragonfly  
(Odonata) fauna of the Northern Yukon and  
Old Crow areas was undertaken. Several  
species (*Somatochlora kennedyi*,  
*Leucorrhinia patricia*, *Coenagrion*  
*interrogatum*), which had been collected  
only once or twice before in the Yukon,  
were common in some of the local bogs  
and fens. Perhaps the most interesting  
discovery of the season was a high  
incidence of hybridization amongst  
*Somatochlora sahlbergi*, a Siberian  
emerald dragonfly, and its two closest  
North American relatives *S. Hudsonica* and  
*S. Albicincta*.

An extensive general collection of  
specimens around Old Crow yielded a  
notable first recording, in the Yukon, of an  
*Acitocoris signatus*, a rare  
amphi-Beringian plant bug.

Visits to the alpine tundra resulted in a  
good collection of hill-topping flies and  
some very interesting butterflies, including  
the recently discovered *Oenias excubitor*.  
Many spiders, beetles and other  
ground-loving arthropods were collected in  
the Bluefish Caves archaeological site. In  
the fens, the rare emerald dragonfly  
*Somatochlora whitehousei* was common,  
and in the alpine hill-topping flies and  
rarely collected butterflies were taken.

Several soil samples have yielded a  
very rich assemblage of mites.

**Biology:** Algae, Barrow Strait  
**Investigator:** J.C. Roff, University of  
Guelph

A continuous series of sediment trap  
samples indicate a rapid flux of organic  
matter from the epontic community to the  
benthos just prior to ice break-up. A  
number of phytoplankton and zooplankton  
samples will allow estimation of the annual  
cycle of production in Barrow Strait.

**Biology:** Marine Ecology, Barrow  
Strait  
**Investigator:** R.J. Conover, Fisheries &  
Oceans

As observed in 1982, the reproductive  
season for *Calanus hyperboreus* was well  
underway, but unlike the previous year's  
observations, the eggs and nauplii were not  
especially prevalent in the near surface  
waters. Detailed observations of the water  
structure in the vicinity of Station 42  
emphasized the presence of a strong  
vertical discontinuity, a fresher, colder  
near-ice layer overlaying deeper, more  
saline Arctic Ocean waters.

In mid-April, there was still virtually no  
evidence for plant production in the water  
column, although the epontic algal bloom  
had begun. By May 34d, there was a  
remarkable proliferation of plants and  
animals. Primary production in the ice at  
the beginning of May was 350 times  
greater than that for the remaining water  
column.

The under-ice layers also supported a  
diverse community of animals including  
harpacticoid copepods, protozoans,  
nematodes and larval polychaete annelids  
and bivalve molluscs.

Although the principal zooplankton  
species in the area were all in or near  
productive condition, there was little  
evidence of feeding either in the water  
column or in the under-ice layer.

Fecundity in the same species over  
the same period was moderately low and  
apparently decreasing.

*Biology:* Ornithology, Yukon Coast and McKinley Bay  
*Investigator:* L. Allen, Environment Canada

Information was gathered on bird species composition, and abundance and habitat preferences in the vicinity of Stokes Point and Phillips Bay. Additional surveys were conducted at King Point to compare bird densities in 1983 with those found in 1981.

This was the third year of a five-year study to monitor the impact on birds of developing a medium draft port in McKinley Bay. Emphasis remained on documenting the number and distribution of moulting diving ducks. In 1983, as in previous years, concentrations of diving ducks were consistently seen in the area south of the spit at Atkinson Point, and at the end of the bay. Unlike other years, concentrations of diving ducks were also seen just south of the artificial island.

*Biology:* Ornithology, Frobisher Bay, Lake Harbour, Cape Dorset, Repulse Bay  
*Investigator:* R.G. Bromley, Government of the Northwest Territories

Gyrfalcon production was measured during the middle period of brood raising at 15 gyrfalcon nests in the Central Arctic from Coppermine to Spence Bay.

Preliminary analysis indicated only 50% of 1982 sites were occupied in 1983. Several new sites were located; number of young per nest was similar between the two years, 3.0 in 1982 and 2.9 in 1983. Since nests were observed considerably earlier in 1982 when eggs and small young were present, the number of young fledged per nest would have been reduced somewhat. Nests were initiated one week earlier in 1983 than the previous year despite the late spring.

*Biology:* Ornithology, Hell Gate, Cardigan Strait  
*Investigator:* A. Dzubin, Environment Canada

Studies on the northern Fulmar have centered on documenting seasonal use of marine foods, breeding bioenergetics during the pre-laying exodus, taxonomic affinities to European and Greenland forms, and colour phases of post-feeding birds. In 1983 collections of birds were made periodically.

Food habits of birds not involved in the energetic study will be examined, through analysis of gizzard and proventriculus contents. Body part measurements and weights were made on all birds. Some 2000 birds were categorized into seven colour phases during prolonged field counts. Comparisons will be made amongst other northern colonies. Also, in 1983, nine cliff faces on the Cape Vera fulmar colony were censused throughout the summer to monitor fulmar abundance. Photographs of cliff faces were obtained and the feasibility of developing a long-term monitoring scheme on such cliffs was assessed.

*Biology:* Ornithology, Hudson Strait, Northern Hudson Bay  
*Investigator:* A.J. Gaston, Environment Canada

A continuation of underwater studies on the benthic fish, which form the main prey of the Black Guillemots, were carried out from Pitsulak City Island and West Nuvuk Island. In addition to land-based observations on the Guillemots, boat transects were carried out intermittently to study the effect of water depth and bottom-type. Aerial surveys for Sabine's Gulls were also carried out on Southampton, Coats, Prince Charles and Air Force Islands. A study of a Thick-billed Murre colony on Akpatuk Island was undertaken. It is estimated that this colony extends over approximately 14 km of cliffs and supports more than 200,000 breeding pairs. It is believed that this is the first time this colony has been surveyed on the ground by non-Inuit, since 1954.

*Biology:* Ornithology, Resolute, Grise Fiord, Seymour Island, Brodeur Peninsula  
*Investigator:* S.D. MacDonald, National Museum of Natural Sciences

Over 200 adult Ivory Gulls were banded and recaptures of previously banded birds were obtained. In addition, 333 Ivory Gull chicks were banded at Seymour Island and Brodeur Peninsula. The colony at Seymour Island Sanctuary appears to be thriving and is still a major and important site of breeding Ivory Gulls. Helicopter surveys of the ice fields and glaciers north of Makinson Inlet, Ellesmere Island and desert plateaus of Brodeur Peninsula reveal the presence of more Ivory Gull breeding colonies. These two regions can now be defined as very important sites of Ivory Gull production in the eastern Arctic.

*Biology:* Ornithology, Prince Leopold Island  
*Investigator:* K. McCormick, Environment Canada

This island supports a unique assemblage of four seabird species - thick-billed murre, northern fulmar, black-legged kittiwake and black guillemot. An annotated bibliography of literature relevant to Prince Leopold Island has been completed.

*Biology:* Ornithology, Prince Marie Bay, Ellesmere Island  
*Investigator:* R.I.G. Morrison, Environment Canada

Studies in 1983 centered around the breeding and post-breeding ecology of High Arctic shorebird populations, particularly the Knot *Calidris canutus* and the Baird's Sandpiper *Calidris bairdii*. Studies were made of growth and development of young and of the feeding habits of the birds during the post-breeding and pre-migration phases, in particular to assess the importance that inter-tidal shoreline areas may play in building up fat reserves prior to departure for the wintering areas.

**Biology:** Ornithology, Truelove Lowland, Devon Island  
**Investigator:** D.L. Pattie, Northern Alberta Institute of Technology

A complete bird census was conducted on Truelove Lowland. There were greater numbers than in previous counts with the greatest increase being in numbers of Bairds. Two wolves were seen for the first time on the Lowland since 1970. Six foxes were seen and one hundred and twenty-nine muskox were divided between Sparbo-Hardy, Skogn and Truelove Lowlands; only two muskox calves were seen.

**Biology:** Ornithology, Western Jones Sound  
**Investigator:** R.W. Prach, Environment Canada

The objective of this study is to investigate ecological relationships in a High Arctic polynya to aid in predicting the effect of offshore hydrocarbon development and marine transportation on marine wildlife associated with polynyas.

Surveys concentrated on documenting a predicted pre-laying exodus by fulmars just before egg-laying observed in other breeding populations.

Observations on the reproductive biology of common eiders, arctic terns and glaucous and Thayer's gulls on St. Helena, Devil, and Calf Islands and fulmars at Cape Vera, Devon Island continued.

Fulmars and guillemots were collected for energetics, food habits and morphometric data.

**Biology:** Ornithology, Bylot Island and Northern Baffin Island  
**Investigator:** A. Reed, Environment Canada

Work conducted on Greater Snow Geese emphasized the quantification of the breeding population on Bylot Island, appraisal of breeding density and success in the vicinity of Jungersen Bay, and assessment of ecological requirements during the brood rearing season. Work on Atlantic Brant was limited to leg banding of goslings and moulting adults near Cape Dominion.

It was concluded that breeding had been successful in most areas of suitable habitat on Bylot Island and Northern Baffin Island in 1983, whereas in 1982 large segments of the range on Northern Baffin had been unproductive as had the high arctic islands. A photographic sample determined that 51% of the geese present on Bylot Island were goslings and 57% in the Jungersen Bay sample plot. The mean brood size was 3.20 compared to 3.00 in 1982.

**Biology:** Zoology, Barrow Strait  
**Investigator:** J.B. Sprague, University of Guelph

Three separate sampling programs for marine invertebrates and fish were conducted. The species of organisms taken and methods used resulted in a collection of species including many copepods. *Gammarus setosus* and *G. wilkitzkii* were collected in the intertidal zone. *Anonyx* sp. and *Boeckismus plautus* were taken in the baited trap. Work is proceeding on the distribution of cadmium within the various species of invertebrates involved. *Parathemisto libellula* contains higher concentrations of cadmium than other invertebrate species taken in the same samples. Work is proceeding on the rates of growth and cadmium uptake in the populations of invertebrates and comparisons between the various groups.

**Biology-Zoology:** Caribou and Muskoxen, Prince of Wales Strait  
 N.W. Victoria Island  
**Investigator:** D.C. Thomas, Environment Canada

In 1983, Prince of Wales Strait and Amundsen Gulf were surveyed to determine caribou movements. No caribou or trails were sighted, nor were concentrations of caribou observed in coastal areas. Hunters in Holman believe that caribou cross sporadically, in small groups between Banks and Victoria Islands in fall and winter. They have never observed traditional seasonal movements across sea ice comparable to those that occur at similar latitude among Prince of Wales Island, Somerset Island and Boothia Peninsula.

As part of a long-term monitoring program of portions of Melville Island, Muskox were surveyed on the south coast and on Bailey Point. On the south coast, one-hundred and forty-one muskoxen (no calves) were counted in 1982, and two-hundred and thirty-seven (twenty-four calves) in 1983. On Bailey Point, two-hundred and forty-two muskoxen (fifteen calves) were counted in 1982 and two-hundred and eighty-six (thirty-six calves) in 1983. On Bailey Point, the mean group size was smaller in summer than in winter. The mean group size in winter was inversely related to the number of muskoxen in the region.

**Biology-Zoology:** Caribou, Itza Lake

**Investigator:** F.L. Miller, Environment Canada

The third and final field season was carried out to investigate the causes of death of newborn migratory barren-ground caribou calves of the Beverly herd on a 5000 km<sup>2</sup> segment of the traditional northern tundra calving ground.

One hundred and one caribou calves and eleven caribou cows were found and necropsied. All the calves in the sample were estimated to be less than 3 days of age at death. The eleven cows were estimated to range from three to eight years of age, based on the wear patterns of their mandibular teeth.

Eighty-seven calves, with objective certainty, were victims of wolf predation, eight died from malnutrition/starvation after becoming separated from their mothers, and three died of pneumonia.

*Biology-Zoology:* Muskrat, Mackenzie Delta  
*Investigator:* D.E. Jelinski, University of Calgary

The study is to relate geomorphic and biological components of varying habitats of muskrats to population density, seasonal movements and physiological condition. Preliminary results of burrow data reveal that there are pronounced seasonal differences in habitat use; muskrats prefer in summer lake habitats characterized by abundant cover, close proximity to emergent food species, and banks with shallow slopes, while in winter, they appear to prefer habitats with steep banks, and close proximity to .75 m of water. Clearly, the overall strategy of habitat selection by muskrats in this subarctic environ, is the acquisition of resources to maximize fitness in summer and in winter to maximize over-winter survival.

*Biology-Zoology:* Polar Bear, Northwest Coast of Baffin Island  
*Investigator:* R.E. Schweinsburg, Government of the Northwest Territories

During the spring of 1983, 47 polar bears were captured and marked along the northeast coast of Baffin Island between Cape Hunter and Durban Island. Six of the bears had been marked previously, five from this study and one in an adjacent area. Blood samples were collected from thirty-seven bears for genetic polymorphism, serological and chemical studies.

Since 1980, one hundred and thirty-nine bears have been tagged along the Baffin Coast and already an inordinate number, twenty-five, have been recovered in the hunter kill.

In May 1982, eight satellite-monitored radios were placed on female polar bears in Lancaster Sound and Barrow Strait to study seasonal movements. They were expected to last 14 months, but none transmitted past September 1982. Since the transmitter package included a regular tracking radio, fifty hours were flown during the spring of 1983, in the hopes of receiving a signal from some of those radios and recovering the satellite package. However, unusually heavy ice precluded bears concentrating in their usual manner and no bears carrying transmitters were found.

*Biology Zoology:* Polar Bears and Seals, Radstock Bay, Dundas Island  
*Investigator:* I. Stirling, Environment Canada

Data were collected on habitat utilization, hunting efficiency of different age and sex classes, effect of harassment, man/bear conflicts, bear interactions. Movements and time budgets have facilitated a better understanding of the management and impact assessment studies.

Under-ice seal vocalizations were recorded and data were collected on seal habitats to study the distribution of over-wintering populations in relation to polynyas, ice conditions, freeze-up patterns, distribution of pupping areas, polar bear distributions and shipping lanes. This work has helped refine and clarify the types of data needed.

The biological importance of polynyas to overwintering populations will be evaluated by studying winter and early spring distribution and abundance in and out of polynya areas.

Research on radio tagging over the past fifteen years in the Beaufort Sea has suggested that bears along the mainland coast are a fairly discrete subpopulation. However, detailed information on movement between the east and west portions of the Beaufort Sea is unavailable. Radio-telemetry, initiated in Alaska in 1980, indicated that most bears tagged north of Alaska spent some time in the eastern Beaufort Sea. In March 1983, in conjunction with the Alaska work, 19 female bears, mostly adults, were instrumented, and follow-up information on subsequent movements is still being collected.

*Biology-Zoology:* Seals, Holman, Somerset Islands  
*Investigator:* T.G. Smith, Fisheries & Oceans

Research on ringed seal breeding habitat was conducted in Prince Albert Sound, western Victoria Island. Subnivean birth lairs were instrumented with thermistors and microphones to describe the micro-climate and activity of seals. Searches of the breeding habitat were carried out using trained dogs which resulted in the estimation of an annual index of productivity. The period June to late August was spent at Cunningham Inlet studying the behaviour of beluga whales which occupy the nearshore areas of the river delta.

*Biology-Zoology:* Ringed Seal, Beaufort Sea, Amundsen Gulf, Prince Albert Sound  
*Investigator:* M.C.S. Kingsley

This was the third in a series of aerial surveys designed to examine the effect of hydrocarbon development in the Beaufort Sea on ringed seal density and distribution. The ice conditions in the Beaufort Sea were normal for the season. The shorefast ice was getting thin, and the open water outside it was extensive. In Amundsen Gulf and Prince Albert Sound, cracks and leads were starting to appear and widen. The two westernmost transects in Amundsen Gulf were open water. Ringed seal densities in Amundsen Gulf and Prince Albert Sound were 3.02 and 2.34/ km<sup>2</sup>, quite similar to previous results of 3.08 and 3.46 in 1981 and 2.61 and 2.03 in 1982.

In the Beaufort Sea stratum, the density of ringed seals was 0.21/ km<sup>2</sup>. This was about half the value, 0.42/ km<sup>2</sup>, obtained in 1982, when there was no floe ice in the survey area; and slightly higher than 0.15 obtained in 1981, when the ice had been similar to 1983. However, the estimated total visible population, 5350, was similar to that of previous years.

*Biology-Zoology:* Marine Mammals, Foxe Basin  
*Investigator:* P. Richard, Fisheries & Oceans

A total of 2,725 walrus, 17 beluga, 16 bowhead and 6 polar bears were counted. Most of the walrus were seen in the areas east and south of Hall Beach at the edge of the pack ice, while most of the whales, belugas, and bowhead were seen in the open water north of Hall Beach and east of Igloolik. This is the first reported marine mammal survey of this area and also one of the largest single reported bowhead count in the eastern Arctic.

*Biology-Zoology:* Beluga Whales, Beaufort Sea  
*Investigator:* R.T. Barnes, Fisheries & Oceans

Data were collected in the Beaufort Sea on the landed beluga distribution by sex and by length. Biological material was collected for tissue samples, frozen milk samples, jaws and eyes.

**Biology-Zoology:** Bowhead whales, Beaufort Sea  
**Investigator:** J. Cabbage, Canadian Research Collective

Aerial searches were made in the waters north of the Mackenzie District in an effort to photograph and subsequently measure bowhead whales. These measurements will be used to help current modelling efforts to determine net productivity of the bowhead population. Approximately 400 photographs were taken; of these, 153 images of whales were measured with 3-dimensional stereophotogrammetry techniques. Additional images were measured in only two dimensions. The most significant result from this research is the discovery of segregation by size class on the summering grounds; fifty percent of the animals in Franklin Bay were over 14 m long and calves were absent from this area. By contrast, the average length of whales near the Mackenzie Delta was 10.5 m. This segregation confounds efforts to achieve an unbiased sample of the components of the population.

**Biology-Zoology:** Whales, Lancaster Sound  
**Investigator:** Rick Hurst, Indian & Northern Affairs

The possible growth in year-round shipping activity through the Northwest Passage has generated a considerable amount of concern on marine mammal distribution and behaviour and hunter success and safety.

Excellent recordings of whale vocalizations and echolocation calls were made on normal and high frequency (120 KHz) recorders. Unique opportunities allowed the recording of individual species calls at very close range. Upon analysis of the tones, it should be possible to document much of the lexicon of narwhal and beluga and to determine the sound source levels for both species.

As in 1982, sound production by the ship was highest in icebreaking when the ship was forced to continually shift from reverse to forward speed and ram the ice under full power. Complete analysis of ship recordings will provide hard data on noise attenuation for evaluating computer model predictions.

Movement of belugas, in particular, was very fast and concentrated; 225 animals passed the ice edge observers in nine minutes. The observation seems to confirm the avoidance reaction to ship noise reported in the previous year's study. Beluga did, however, return to the area of ship entry within approximately 24 hours. Some narwhals remained near the ice edge within a few kilometers of the ship entry, and narwhal again appeared to react less dramatically to the presence of the ship.

**Botany:** Water Quality Monitoring, Roland Bay, Stokes Point  
**Investigator:** G.R. Mackenzie-Griève, Environment Canada

The Environmental Protection Service undertook investigations at Stokes Point on the Yukon Coast and at selected rivers draining the Yukon's north slope. The data collected were water quality parameters, sediment characteristics and benthic invertebrate information. Sample stations were established in the upper and lower reaches of the Spring River, Babbage River, Trail River and Deep Creek. The purpose of the study was to collect baseline information prior to disturbance by potential development on the Yukon north slope.

**Botany:** Truelove Lowland, Devon Island  
**Investigator:** L.C. Bliss, University of Washington

A study was begun of the life history and physiological ecology of *Salix arctica*, and on muskoxen grazing on sedges. The effect of muskoxen saliva on shoot growth is also being investigated. Levels of nutrients and carbohydrate reserves are being measured in grazed vs. ungrazed plants.

**Botany:** Alexandra Fiord, Ellesmere Island  
**Investigator:** J. Svoboda, University of Toronto

The following projects were followed: 1) a study of the lowland sedge meadows; 2) a feasibility study of growing potatoes (6 varieties) and vegetables (30 varieties) in solar heated green-houses, constructed on the tundra; and 3) physical environment and plant communities at the plateau and a continuation of micro-meso-climate measurements of the lowland, the plateau and the Sverdrup Pass.

Two trips were made to Sverdrup Pass to survey for richness of vegetation and wildlife. Permanent quadrats were established and an automatic meteorological station constructed. The high arctic gardening experiment was very successful in terms of methods developed, edible crops produced and experience gained. Techniques will continue to improve with further testing of selected crops.

**Climatology:** Arctic Islands  
**Investigator:** B.T. Alt, Energy, Mines & Resources Canada

Aviation weather reports were collected from sixty-seven stations from northern Ellesmere Island to southern Victoria Island. Eighteen of the stations produced records longer than a month in duration. These records were transmitted to Arctic Weather Central in Edmonton on a real-time basis for use in forecasting.

**Climatology:**  
**Meteorology:** Arctic Islands  
**Investigator:** C. Labine University of Alberta

An overwintering station established in August 1982 was found to be operational; however, because of faulty equipment there was a data gap from early November to early May. The main field activity consisted of deploying several meso-scale weather stations within the Alexandra Fiord Lowland and in Sverdrup Pass. Furthermore, intensive microclimatological investigations of the various tundra surfaces were performed.

*Geodesy:* Coronation, Queen Maud Gulf  
*Investigator:* A.R. Eaton, Energy, Mines & Resources Canada

The primary task was to establish new positions using the United States Navy Navigational Satellite System or Doppler Satellite in an area between Coopermine and Spence Bay and in a 300 km east-west area near Paulatuk. These positions will increase the accuracy of existing horizontal control surveys and, when combined with aerial photography, support the 1:50,000 scale topographical mapping program. Eighty-two new Doppler positions were established, at least half of which have elevations determined by trigonometric means or by spirit levelling. This presents an excellent opportunity to evaluate the predicted geoid-ellipsoid separation, the accuracy of Doppler-derived elevations, etc. in the project area.

*Geology:* Lower Cretaceous, Northern Yukon  
*Investigator:* J. Dixon, Energy, Mines & Resources Canada

Lower Cretaceous rocks were investigated in the Northern Yukon. Sites for possible uranium and phosphate-bearing rocks were examined, and samples were collected from the Upper Cretaceous Boundary Creek Formation for polynological studies.

*Geology:* Precambrian, Hepburn Island  
*Investigator:* W.A. Padgham, Indian & Northern Affairs Canada

A detailed reconnaissance of the Aniak River Granite Gneiss and its enclosing supracrustal rocks was conducted. Two samples (one of the late granite cutting the gneiss, and the other of a rhyolite(?) in the supracrustals enveloping the gneiss), were collected for zircon geochronology.

Preliminary results were released in January as a 1:125,000 scale compilation for 76M/W. Additional geochronology and photography is underway.

Another project completed the mapping of Hepburn Island, 76M/W1/2; six 1:30,000 scale maps are in preparation to be released early in 1984.

*Geology:* Coronation Gulf  
*Investigator:* J.M.B. Seaton, Indian & Northern Affairs Canada

Exposures of Rae Group, Epworth and Recluse Group sediments in the northern Bear Structural Province were visited, as were uranium showings on the Asiatic River, drilled in recent years. These surveys are of value in effectively monitoring mineral exploration.

*Geology:* Coal, Fort Norman  
*Investigator:* D.K. Norris, Energy, Mines & Resources Canada

A field survey was carried out, examining the stratigraphy, structure and sedimentology of the Summit Creek Formation in the Brackett Basin.

Preliminary results indicate that the Summit Creek Formation embraces the Cretaceous-Tertiary boundary with ages ranging from Maastrichtian to Paleocene. It is also an alluvial plain and alluvial fan clastic sequence. The formation includes at least three coal-bearing zones, one coal seam up to about 10 m thick, and several volcanic ash beds with at least one up to 17 m thick. The coals in the Summit Creek Formation range in rank from lignitic to subbituminous. There may be economically significant resources in low rank coals in the Brackett Basin.

*Geology:* Coastal Processes, Jones Sound  
*Investigator:* R.B. Taylor, Energy, Mines & Resources Canada

Low altitude video tapes were taken along the coast of Jones Sound while launch surveys were completed off fine tidewater glaciers along northeast Devon Island.

Large submarine glacial deposits off Devon Island suggest that some of the valley glaciers once stood 2 to 6 km offshore for a considerable time before rapidly retreating to near present position. To-day, the proglacial tidewater environments in bays resemble those of

the slowly retreating shallow water glaciers in Glacier Bay, Alaska. Most of the Devon Island tidewater glaciers are grounded and are fringed by an ice-proximal shelf. Ice front thickness is commonly 55 to 76 m but at the face of larger glaciers it exceeds 100 m. Sediment gravity flows, observed across the ice-proximal shelf fore-slope, are an important agent in the transfer and deposition of sediment in the proglacial basins.

*Geology:* Stratigraphy, Victoria Island  
*Investigator:* A.EvH. Pedder, Energy, Mines & Resources Canada

Joint stratigraphic and paleontological studies were conducted on northwestern Victoria Island.

Seven sections of Devonian rocks were measured and systematically collected for future petrographic and biostratigraphic work. The structure and paleoecological relationships of the Devonian rocks of Princess Royal Islands were elucidated. Preliminary identification of fossils suggests important new data for correlation of arctic Devonian sequences.

*Geology:* Mineralogy, Northern Yukon  
*Investigator:* H.G. Ansell, Energy, Mines & Resources Canada

Mineralogical and geochemical studies continue on a recently discovered unique mineral occurrence in the Rapid Creek - Big Fish River area in the Northern Yukon, now recognized as a classic mineral locality for the rarity and beauty of phosphate mineral species. Specimens for research, preservation and exchange were collected. About seventy microprobe analyses have been made to date, and preliminary results indicate discreetly different chemical populations in the Rapid Creek area. The Hess River mineral is the Mg end-member, penikisite, found in a different geological environment. Due to the complex chemistry of these minerals, new analytical correction factors had to be derived prior to analysis, while other analytical problems are still to be resolved.

A new mineral found during 1983 occurs as finely crystalline radiating aggregates on fracture surfaces in the iron formation.

*Geology:* Mineral Occurrence,  
Prince of Wales Island  
*Investigator:* W. Gibbins, Indian &  
Northern Affairs Canada

The carvingstone potential of ultramafic rocks for the Inuit carving industry (a gross market value of 10 to 12 million dollars a year) was investigated at a site with fair accessibility. However, the limited quantity of large pieces, coupled with the low demand for stone in the nearest community, Resolute Bay, indicates that this locale has minor economic significance.

*Geology:* Paleontology, Cornwallis,  
Lowther and Bathurst  
Islands  
*Investigator:* A.C. Lenz, University of  
Western Ontario

A detailed collection from the Lower Devonian reef complex of Lowther Island was completed. One important discovery was fossil evidence for late Lower Devonian rocks on Young Island. Another study was undertaken of late Ordovician to Wenlock Chitinozoa and graptolites of Cape Phillips Formation. Sections were sampled in detail on the Laura Lakes area and Rookery Creek on Cornwallis Island. Limestone samples were collected from the Disappointment Bay Formation on Lowther Island for conodonts.

*Geology:* Periglacial Features,  
Resolute  
*Investigator:* A.L. Washburn,  
University of Washington

Quaternary historical studies were expanded, particularly observations relating to the Holocene marine limit and possible earlier limits. Shells were collected from various altitudes and have been identified.

Radiocarbon dates determined to date suggest two age groupings: 10,000 years B.P. and 27,300 - 32,000 years B.P. A selection of shells has been submitted for determination of amino-acid ratios.

Excavations of patterned ground, especially "plugs", were continued and soil samples collected. Excavations were also made to determine the presence of ice wedges. Movement observations to date on a gelifluction lobe and on frost activity in patterned ground are being computerized.

*Geology:* Geomorphic Processes,  
Banks Island  
*Investigator:* A.G. Lewkowicz,  
University of Toronto

Activities were concentrated on south-west Banks Island near the Sand Hills moraine. The study area was selected because more than half the terrain within 500 m of the coast has been affected by thermokarst in the form of ground ice slumps, many of which are now stabilized; but along 10 km of coast eight are still active.

The radiation balance can be modelled for each part of the slump headwall in spite of variability in slope angle and orientation.

In association with the radiation study, measurements were made on the rates of thaw of the ice-rich slump face. A number of ground ice samples were obtained, and thawed to provide information on excess ice content. Preliminary comparisons of radiation received and rates of melt suggest that radiation supplies a greater proportion of the energy required to thaw the slump face than was previously suggested.

*Geology:* Fluvial Geomorphology,  
Mackenzie Delta  
*Investigator:* M. Lapointe,  
Environment Canada

A preliminary reconnaissance of fluvial processes and patterns in the Mackenzie Delta was completed. During spring breakup, airborne observations were carried out on general extent of bank erosion due to floating-ice action. In early summer background information was gathered on channel geometry as well as channel-lake interactions.

The approximate magnitude of bed shear stresses in Middle, Napoiak and east channel reaches was assessed, following breakup, using both velocity profiles and direct measurements of flow depth and energy slope providing a rough indication of the flow strengths available for sediment transport and bank erosion. Channel bathymetry in selected reaches sheds light

on patterns of scour and deposition. Bed material samples were collected to assess the distribution of the sand, silt and clay fractions of the sediment load, in the delta channel network.

In late autumn, nine cut bank sites were established in the eastern part of the delta for subsequent monitoring of bank erosion mechanisms, two of which will be provided with time lapse camera systems in time for the 1984 breakup.

*Geology:* Quaternary Stratigraphy,  
Yukon Coast, TUK  
Peninsula  
*Investigator:* J.-S. Vincent, Energy,  
Mines & Resources  
Canada

The lithostratigraphic framework was established by means of abundant plant and animal remains collected for radiocarbon or uranium-thorium dating, for amino acid analyses and for paleontologic and paleoecological studies. Oriented sediment samples were also collected for paleomagnetic studies.

*Geology:* Quaternary, Victoria  
Island  
*Investigator:* D.R. Sharpe, Energy,  
Mines & Resources  
Canada

Preliminary results from landform investigations on Victoria Island show that primary (glacial) fabric is preserved on well drained sites, less than one metre from the surface. This has important implications in the study and understanding of glacial landforms and the assumed intensity of periglacial processes.

Detailed site studies will investigate models of deposition, to improve our understanding of landforms and their enclosed sediments in areas where depositional facial landforms occur.

*Geology:* Quaternary, Pullen Island  
*Investigator:* P.J. Kurfurst, Energy, Mines & Resources Canada

Experimental drilling and sampling was carried out in early April in an area of frozen seabottom sediments east of Pullen Island. A combination of various drills and sampling techniques and tools was used in an attempt to compare and evaluate drilling performance (advance rate, depth penetration) and capability for the recovery of relatively undisturbed, marginally-frozen soil samples. Piston corers are inefficient. The vibracorer proved to be more efficient with a variety of sampling tools.

*Geology:* Quaternary, Arctic Islands  
*Investigator:*<sup>2</sup> D.A. Hodgson, Energy, Mines & Resources Canada

The extent of the last major expansion of ice caps and sheets in the High Arctic is poorly understood, partially due to limited investigation, but chiefly because of the widespread absence of the type of morphologic and lithostratigraphic indicators that enable definition of the Laurentide and the Scandinavian ice sheets.

Circumstantial evidence of Late Wisconsinan glacial ice over-running the highest land (Shaler Mountains) was obtained on north-central Victoria Island. On Byam Martin Island, a thin uniform till sheet, up to 135 m a.s.l. and overlain by early Holocene marine sediments, is further evidence of the 10,000 year B.P. Viscount Melville Sound Ice Shelf. On west-central Ellesmere Island, better chronological control was obtained on the prominent drift belt at the fiord heads formed by early Holocene oscillating ice fronts. Further evidence was found that ice retreated to the belt from downfiord. Thus, a coalesced ice sheet must have covered at least central and southern Ellesmere Island, and likely other islands to the south and west.

*Geology:* Quaternary, East Central Ellesmere Island  
*Investigator:* W. Blake, Jr. Energy, Mines & Resources Canada

Coring for frozen pond sediments served merely to eliminate potential sites on Knud and Bache Peninsulas, as well as near Alexandra Fiord; no sediment was recovered from the four ponds at which coring was attempted.

The main emphasis was placed on study of ice motion indicators, such as striae, and on the collection of erratics. Over fifty pebble counts were completed to provide additional information on former directions of ice flow.

Additional collections of flowering plants and mosses were made on Cape Herschel Peninsula while over 500 samples of algae and shallow water sediments were collected to provide a data base for interpretation of algae found in sediment cores. Collections of living molluscs were made to compare with the fossil fauna found in raised marine sediments and in till. Analysis of lake sediment cores collected in 1980, 1981 and 1982 is continuing, the primary emphasis at present being placed on a core collected near Kap Ingfield in Greenland in 1980.

*Geology:* Glacial Geomorphology, Northern Ellesmere Island  
*Investigator:* J. England, University of Alberta

Three different projects were conducted on northern Ellesmere Island.

Botanical investigations were conducted on a richly vegetated upland fault block at the entrance to Piper Pass. Both the contemporary bryophytes and the peat will be analysed for species diversity and the fossil material will be dated to determine whether any of this material accumulated during the last glaciation.

Work continued on the extensive raised marine sediments exposed along the southeast shore of Clements Markham Inlet. Several new sections will add to the overall reconstruction of this past sedimentary environment. There is a growing interest in the nature of fiord sedimentation in arctic areas and this study should contribute to the understanding of marine sediments in a glaciated fiord now covered with sea ice.

The mass balance and topoclimatology of the small plateau ice caps immediately north of St. Patrick Bay, Robeson Channel, was studied also. These plateau ice caps have retreated considerably during the recent past and, due to their small size and their proximity to the regional snowline, they provide an excellent index of short-term climatic changes at high latitudes. This study is relevant to the understanding of climatic conditions related to past glaciations in the area as well as to understanding the possible effects of future climatic changes on low elevation snow and ice in the high arctic.

*Geology:* Sedimentology, East Coast Baffin Island  
*Investigator:* J. Syvitski, Energy, Mines & Resources Canada

The objectives of this project are summarized briefly: 1) to monitor prodelta dynamics with the emplacement of oceanographic moorings; 2) to evaluate placer potential of heavy minerals within the coastal sediments of Baffin Island; 3) to conduct coastal erosion/accretion studies combined with the thermal history of foreland beaches; 4) to survey the proglacial Stewart Lakes, a fascinating turbid environment. The lakes once were a marine fiord that have become landlocked since the Little Ice Age. A recent pullback of one side-entry glacier at the mouth has dropped the lake level several tens of metres; and 5) to conduct a survey of sandur-type deltas, evaluating the general Holocene influence of tides, wave activity and discharge dynamics.

*Geology:* Stratigraphy, Axel Heiberg Island  
*Investigator:* A.F. Embry, Energy, Mines & Resources Canada

Mesozoic strata were studied on western Axel Heiberg Island to clarify both the Mesozoic succession in the area and the regional surface and subsurface correlations. Upper Paleozoic strata and Cretaceous volcanics were also examined.

*Geology:* Stratigraphy, Axel Heiberg Island  
*Investigator:* W.M. Schwerdtner, University of Toronto

The work included detailed geological mapping, study and measurement of minor structures and rock fabrics and collection of oriented and unoriented rock specimens for the analysis of strain and/or mineral fabrics in the laboratory. Mosaic structures in anhydrite are being used as a strain gauge and preliminary results are very encouraging. Original geometry of the mosaic structures is being established by literature surveys. A preliminary working hypothesis is being developed to explain the narrow zone of canoe-shaped synclines and associated anhydrite spines on western Axel Heiberg Island.

*Geology:* Surficial Marine, Beaufort Sea  
*Investigator:* S. Blasco, Energy, Mines & Resources Canada

Shipborne high resolution acoustic reflection profiling and seabed sediment sampling were continued to further delineate regional sediment stratigraphy, structure, properties and history to depths of 100 m below seabed. Particular emphasis was placed on the distribution of shallow permafrost and on the morphologic characteristics of ice scour. Slope failures at the edge of the continental shelf that were acoustically-profiled in previous years, were mosaiced and cored to determine the sedimentological and geotechnical properties of the seabed. This information contributes to the assessment failure mechanisms and the timing of such failures.

Time-series studies to measure the impact of the Mackenzie River sediment plume on shelf sediment distribution, transport and accumulation rates were continued.

Nimbus-7 satellite imagery was calibrated to determine surface suspended sediment concentrations by collecting and analysing surface plume samples during satellite overpasses. In addition, CTD, attenuation meter and water column sediment concentration profiling were repeatedly conducted along coastal transects to determine plume characteristics with water depth.

*Geology-Geophysics:* Alpha Ridge Study, Central Arctic Ocean  
*Investigator:* J.R. Weber, Energy, Mines & Resources Canada

A large scale multidisciplinary expedition was carried out to study the nature and origin of the Alpha Ridge. The study included bathymetry, gravity, sub-bottom and intermediate reflection seismic, crustal refraction seismic, heat flow measurements, coring and dredging, seafloor photography and physical and chemical oceanography. A 1600 m long sea ice runway was constructed at the campsite, at 85° 56'N, 112°30'W. Scientific activities were conducted March 30 to May 23. Bathymetry shows the Alpha Ridge to be more rugged, complex and extensive than anticipated. The junction of the Ridge to the Ellesmere Island Continental Shelf at a depth of about 2000 m is not sharply defined. Gravity and preliminary seismic results indicate that the crust under the Ridge is of intermediate thickness. Gravity anomalies along the Ellesmere Shelf are similar to those along the rest of the Arctic Continental Shelf. Cores recovered include laminated ooze more than 65 million years old. Rock grab samples recovered from the Ridge included highly weathered volcanic basalt, probably of marine origin. Heat flow values were lower than those found in the Fram Basin, Makarov Basin, Canada Basin or on the Lomonosov Ridge.

*Geophysics:* Paleomagnetism, Sverdrup Basin  
*Investigator:* H.C. Halls, University of Toronto

The objectives of this project are to determine the age of the silts related to the development of the basin and to use the directional property of the remanent magnetisation to study deformation within the basin.

Preliminary results of the Skarre Fiord Syncline suggest that, like the Mokka Fiord Anticline, little or no rotation is required. On the other hand, the NRM results from the Blue Mountain Section V are similar to those of Section II, suggesting a need for anticlockwise rotation to return them to the APW path. A tentative interpretation, pending further thermal and alternating field cleaning, is that on the immediate hanging wall side of major thrusts, an anticlockwise rotation of synclinal structures has taken place, which is

manifested geologically by sinistral bending of fold axes on approaching the thrusts.

Two discoveries are relevant: reversed magnetisations occur towards the lower part of both the Mokka and Skarre Fiord section, and there is evidence for an increase in oxidation of magnetic phases with depth in the Skarre Fiord section, a possible consequence of burial metamorphism.

*Geophysics:* Paleomagnetism, Axel Heiberg Island  
*Investigator:* E. Irving, Energy, Mines & Resources Canada

Paleomagnetic samples (about 300) were collected from seventy-nine sites.

Permain Esayoo Formation basalts and Assistance Formation sandstones were collected to test the westward extent of the anticlockwise rotations observed in Permain collections from Ellesmere Island. Lower and Upper Cretaceous basalts from the Isachsen and Strand Fiord Formations were collected in hopes of identifying for the first time on land the base of the long Cretaceous quiet normal period (that is the  $M_0$  reversal).

Initial analysis of the Cretaceous specimens have identified some reversals in the Isachsen Formation but their exact position in the sequence of M-reversals is not yet known.

*Geophysics:* Geothermal, Mackenzie Delta, Sabine Peninsula  
*Investigator:* A. Judge, Energy, Mines & Resources Canada

Down hole thermal logging was conducted at the Ilisarvik test site on Richards Island and in a new 1000 m deep hole on the Sabine Peninsula. Other surveys of the base of permafrost were conducted at Parsons and Big Lakes.

Efforts were concentrated on the CESAR project in which a gradiometer probe was deployed for 13 measurements of the heat flow through the ocean bottom sediments. Measurements comprised water temperature profiles, sediment temperatures and thermal conductivities, the latter in-situ and on recovered piston cores.

*Geophysics:* Seismology, Beaufort Sea  
*Investigators:* S. Pullan, J. Hunter, Energy, Mines & Resources Canada

A series of holes in the seabottom of the Beaufort Sea delineate the temperature regime of the near-shore sediments. These are monitored until equilibrium temperature conditions are recovered.

Seismic velocities of the near-bottom sediments were recorded using a bottom-laid array at the drill locations on the Itipok line as well as the line drilled in 1982 off-shore from Toket Point.

The C.C.G. Ship, the Nahidik, was used as a survey vessel for a joint A.G.C./G.S.C. project to obtain information on the near surface sediments by geophysical methods as an aid in the interpretation of the Quaternary history of the southern Beaufort Sea. In summary, 285 line kilometres of seismic data were added to the continuing Beaufort Sea off-shore program. A test of the deep-tow seismic recording system was conducted and the system proved to perform adequately.

The development of seismic filters and software for data retrieval and processing will be required before the system can be completely tested. Ice conditions in the fall did play a major role in the location of the data collected.

*Geophysics:* Atmospheric Refraction, Tuktoyaktuk, N.W.T.  
*Investigator:* W. Lehn, University of Manitoba

The phenomenon most frequently observed was the inferior mirage. Numerous solar observations were obtained for sun elevations near the horizon. Included was a complete sequence covering the onset of the midnight sun. Optical phenomena such as the green flash and distortion of the solar ice were frequent, but the Novaya Zemlya effect did not appear.

Superior mirages which are much more complex in nature and hence more interesting scientifically were not as frequent as expected. However, several good instances were observed and recorded affecting objects whose distances lay in the range from 20 to 60 km.

*Glaciology:* Expedition Fiord, Axel Heiberg Island  
*Investigator:* W.P. Adams, Trent University

Measurements of mass balance were taken on White Glacier. Existing stakes were re-drilled while others were established.

Detailed chemical profiles were obtained for the full water column of Colour Lake, Expedition Fiord, and for a series of cored tubes from its ice cover. In addition, chemical samples were obtained from streams feeding the lake.

*Glaciology:* Northern Ellesmere Island  
*Investigator:* M.O. Jeffries, University of Calgary

A wire strainmeter installed on Ward Hunt Ice Shelf recorded vibrations of 35-40 second and 20-minute periods, probably related to the ocean swell at the ice front and internal waves beneath the ice shelf respectively. Ice conditions along 180 km of coast-line between Cape Albert Edward and Hansen Point were noted. About 40 km<sup>2</sup> of ice had calved from the east end of Ward Hunt Ice Shelf since spring of 1982.

Stratified Lakes A and B and Disraeli Fiord were investigated again and stratified water conditions were discovered at the south end of Milne Fiord.

*Glacier Physics:* Arctic Islands  
*Investigator:* R.M. Koerner, Energy, Mines & Resources Canada

The mass balance of Melville South, Northwest Devon, Meighen and Northern Agassiz ice caps was measured. In addition, on the Agassiz Ice Cap, bulk snow samples were collected, melted and filtered for pollen studies, borehole tilt and diameter were remeasured at two borehole sites, and several one-litre samples of the last 30 years of snow taken for graphite particle (soot) analysis.

*Hydrology:* Inuvik-Tuktoyaktuk Corridor, N.W.T.  
*Investigator:* J.C. Anderson, Environment Canada

The primary aim has been to identify potential trouble spots (e.g. icing sites) and acquire data relevant to highway culvert and bridge design.

Field studies continued at several watersheds in the taiga and tundra zones of the Inuvik-Tuktoyaktuk region. Data were gathered on snowpack water equivalent, river channel and culvert icings, precipitation, air temperature and discharge.

*Hydrology:* Mackenzie Delta  
*Investigator:* S.C. Bigras, Environment Canada

Intensive field study of the hydrological regime of some lakes and channels was undertaken in the Mackenzie Delta to assess the potential impact of increased flow regulation upon the Delta lake levels, water quality characteristics, and the interactions between unconnected lakes, connected lakes and their channel systems.

Water levels at 9 sites along the eastern sector of the Delta were monitored using 16 mm time lapse photography from April to September. Water quality analyses were undertaken prior to and after the breakup and at low water level conditions. Other data were gathered on snowpack water equivalents, ice thickness, water temperatures, wind direction and velocity and amount of precipitation.

Preliminary analysis of 1982 and 1983 data suggests that backwater flooding due to ice jamming, during the breakup period, is the critical factor in the Delta lakes regeneration. Hydrochemical analysis revealed spatial and temporal trends in the Delta lakes' water quality characteristics.

*Hydrography:* Beaufort Sea  
*Investigator:* J.A. Vosburgh, Fisheries & Oceans

The deep draught shipping corridor across the Beaufort Sea started in 1981 was completed. No pings were found at the eastern end of the corridor, the shoalest depth found in 1983 being 25.9 m.

An area north of Baillie Islands was surveyed at a scale of 1:100,000 and work was started on a standard navigation chart survey between Herschel Island and the Alaska border.

*Hydrography:* Barrow Strait  
*Investigator:* D. St. Jacques, Fisheries & Oceans

Hydrographic and oceanographic surveys were carried out with a Deep Access Reconnaissance Television. The D.A.R.T. was equipped with upward and downward looking sounding transducers and a gyro compass. The survey indicates that the D.A.R.T. could maintain a preselected depth for sounding but failure of the gyro precluded the completion of a detailed survey.

The D.A.R.T. was also used to attempt to locate a tide gauge mooring in Barrow Strait and to pass lines under the ice; it was unable to locate the test mooring but was successful in passing lines under the ice between two holes.

The rotary side scan was also used to attempt to locate the test mooring. The side scan could not locate the mooring without the aid of an acoustic transponder.

*Hydrography:* Currents, Dease Strait  
*Investigator:* M.J. Woodward, Fisheries & Oceans

The objective of this project was to measure near-surface currents (10 m) in Dease Strait and to evaluate the performance of Applied Microsystems RCM-12EX current meters. These current meters are designed for ice-mounted applications with the data recorder mounted in a well near the ice surface.

Currents were recorded at the most northerly station. The temperature recorder performed well at ambient temperatures reaching -37°C without shelter or heating.

*Hydrography:* Tidal Survey, Prince Regent Inlet, Bellot and Barrow Straits  
*Investigator:* D. St. Jacques, Fisheries & Oceans

Tidal surveys were undertaken in four areas. In Prince Regent Inlet, four tide gauges and four current meters were deployed; preliminary results indicate a maximum tidal range of 2.8 metres, and a propagation time of 1 1/2 hours from Lancaster Sound to Bellot Strait. The Bellot Strait gauges were installed to verify

previous data; the results support the earlier survey. Three gauges were deployed in support of the long-term study of oceanographic processes in Barrow Strait. Lastly, one gauge was deployed off the north coast of Ellesmere Island to confirm the sounding reductions used for the hydrographic survey of the same area.

*Hydrography:* Tidal Surveys, Northwest Ellesmere Island  
*Investigator:* S.T. Grant, Environment Canada

Five gauges were recovered and all produced good quality data records. A cotidal chart for Jones Sound was constructed from these data sets, and six additional tide gauges were deployed at Thule Airbase, northern Baffin Bay, Coburg Island, Belcher Point, King Edward Point and Cape Skog; all but the gauge at Coburg Island were recovered.

*Hydrography:* Tidal Surveys, Arctic Islands  
*Investigator:* F.E. Stephenson, Fisheries & Oceans

The objectives of this project are to obtain accurate measurements of tidal and long-term water level variations in waters contiguous to the Arctic Archipelago and to provide these data for studies of long-term variations in net transport through the waterways of the Archipelago.

Bottom-mounted pressure gauges were installed at Mould Bay, Isachsen and Auldild Bay, and the two instruments at Ponds Inlet are complete. Six months of data were collected at Mould Bay and one month only at Isachsen.

*Oceanography:* Parry Channel  
*Investigator:* R.A. Lake, Fisheries & Oceans

Nineteen current meters and three water level gauges were deployed during late March - early April and were recovered mid-June; they provided data on the propagation of the tidal signal and on the magnitude and direction of tidal and mean flow in these ice-covered waters during spring. In addition, a year-long mooring comprised of two current meters and a water level gauge was installed in Austin Channel to investigate current variability throughout the year. Water structure was determined from 30 CTD profiles which were supplemented by 52 CID profiles from waterways adjacent to the Northwest Passage. Water level data in Prince of

Wales Strait was successfully collected over a 15-month period. These data, augmented by local summer weather stations established for that purpose, will permit determination of integrated channel flow from cross-channel pressure differences. Analysis of all data to the end of 1983 has provided information on surface current patterns in Prince of Wales Strait, Viscount Melville Sound and adjacent waters and an understanding of the upward flux of heat from the Atlantic water in the region which warms the subsurface waters of the Northwest Passage which, when brought to the surface over sills in the central Archipelago, contributes to the formation of polynyas or their unstable sea ice covers.

*Land Use Study:* Melville Peninsula, Southampton Island  
*Investigator:* G. Ironside, Environment Canada

Lands Directorate scientists undertook ecological land surveys, coastal landform classification and reconnaissance soil surveys throughout the areas of Melville Peninsula and Southampton Island as well as a detailed terrestrial ecosystem mapping of Coats Island. These studies are in support of the Northern Land Use Information Mapping Series.

*Photogrammetry:* Mackenzie Basin  
*Investigator:* T.D. Prowse, Environment Canada

An intense study of ice jam processes was undertaken at the confluence of the Liard and Mackenzie Rivers. The downstream advance of the break-up front was monitored by light aircraft using an EnviroPod 35 mm remotely-controlled, camera system and a field portable video camera and recorder. Two 16 mm time-lapse cameras were also located on the ground at the mouth of the Liard River. Hydrometeorological observations near the confluence included ice surveys, water level and velocity measurements, and the measurement of the energy balance of the ice sheet prior to breakup. Once a jam was established, water temperatures were

measured using an infra-red radiation thermometer. The jam remained intact for just over a week which offered a unique opportunity to study the processes which lead to the deterioration and final release of ice jams.

Relevant hydrologic and climatic data records are now being analysed to determine the long-term, relative importance of hydro-thermal and mechanical forces to break-up and ice-jamming.

#### *National Parks*

*Survey:* Various Arctic Locations  
*Investigator:* T. Kovacs, Environment Canada

Possible pack boundaries were examined and information for future planning was collected for the proposed northern Yukon National Park and in north Baffin Island. Researchers in the proposed northern Ellesmere National Park were interested in park management requirements. The findings will be essential in determining how to manage the proposed park between the time it is established and before detailed plans are proposed.

*Oil Spills:* Cape Hatt  
*Investigator:* G.A. Sergy, Environment Canada

A variety of scientific field studies were conducted during the summer of 1983.

The Shorelines Countermeasures Program was continued; oil plots established in 1980, 1981 and 1982 were profiled and resampled for chemical analysis. In addition, maps of the surface oil on Bay 11 were prepared and this site also resampled and resurveyed. A significant portion of oil still remained on the Bay 11 beach.

The nearshore study was a continuation of existing monitoring programs using design and techniques identical to those utilized in previous years. Collections, for hydrocarbon analysis, were made of surface and subsurface waters, subtidal sediments and the tissue of five benthic animals in the four experimental bays of Ragged Channel. Collections of oiled beach material were made in Bay 11 and the Z-Lagoon plots, as well as water, tissue and sediment from Milne Inlet.

Experiments related to the dynamics of hydrocarbon uptake and clearance in Cape Hatt invertebrates were conducted on site.

*Remote Sensing:* Tuktoyaktuk, N.W.T.  
*Investigator:* J.F.R. Gower, Fisheries & Oceans

A joint industry-government remote sensing experiment arising from an Unsolicited Proposal was conducted from Tuktoyaktuk to study and explore the possibility that oceanographic variables such as water colour and temperature can explain year-to-year changes in the distribution of the Bowhead Whale on the southern Beaufort Sea.

Two systematic aerial surveys of ocean colour were made.

*Sea Ice:* Adams Island  
*Investigator:* R. Frederking, National Research Council

Adams Island at the intersection of Lancaster Sound and Navy Board Inlet was selected for a study of ice interactions. Ice conditions in the area include level first-year sea ice, pressure ridges, hummock fields, multi-year ice flows, pack ice and icebergs.

Several visits were made to characterize ice conditions and interaction processes at freeze-up, in mid-winter and shortly before break-up.

A super 8 movie camera operating in a time lapse mode successfully recorded the events up to an including break-up.

The deformation field around the island showed compressive ice strains normal to the island on the upstream side and extensional strains to either side of the island.

*VHF/UHF Propagation:* Rea Point, Resolute, Jones Sound  
*Investigator:* J.I. Strickland, Department of Communications

Unusual propagation phenomena of VHF/UHF radio waves have been observed and recorded in an on-going experiment related to overall communications in the Northwest Passage.

P.C.S.P. support was also provided for:

- a film documentary on science in the Arctic;
- an investigation of Bowhead Whales in the Baffin Island coast and Foxe Basin;
- a study of fish migration at King Point;
- a study of the tundra peregrine in the Northern Yukon;
- investigations of migratory birds at Anderson River and TUK Peninsula;
- a study of coastal fish migration at Tuk Harbour;
- a camp cleanup at Dundas Island;
- sea-ice classification surveys at Navy Board Inlet;
- investigations of biological marine sediments benthos in the Beaufort Sea, Hall Beach, Hutchison and McKinley Bays;
- underwater investigations of the Breadalbane at Beechey Island;
- oceanographic surveys in the Resolute area;
- various geological surveys of stratigraphy and paleontology nature in the areas of Cornwallis, Prince of Wales, Bathurst and Somerset Islands, Boothia, Brodeur and Grinnell Peninsulas;
- investigations of geomorphic processes at Tuk peninsula and Horton River;
- surficial geological mapping surveys of southern Ellesmere Island;
- tidal surveys at Jones Sound, Bylot and Devon Islands;
- archaeology surveys near Bathurst Peninsula and the Mackenzie Delta;
- various types of environmental inspections; and
- a project to study sediments in some lakes on Banks Island.

#### **Plans 1984-85**

The 1984 Arctic field season will see more than 200 scientific parties conducting their individual and characteristic investigations in the Canadian Arctic. The continuing bathymetry/gravity reconnaissance surveys will proceed in Prince Regent Sound, while oceanographic investigations of the Northwest Passage will be resumed. Wildlife and geological investigations will be very prominent. A scientific station may be established on a drifting ice island - a large piece of ice calved from Ward Hunt Ice Shelf in late 1982/early 1983; the ice island has been marked by a telemetering buoy.

## Canada Oil and Gas Lands Administration (COGLA)

### Economic Function: General Government Services

COGLA administers and regulates petroleum activity on the Canada Lands. This is an area encompassing 6.4 million square kilometres in the Yukon, the Northwest Territories and other areas north of 60 degrees latitude, which are under the jurisdiction of the Minister of Indian Affairs and Northern Development, as well as another 3.8 million square kilometres off the East and West Coasts, under the jurisdiction of the Minister of Energy, Mines and Resources. COGLA's authority comes from two statutes: The Canada Oil and Gas Act, which provides it with broad regulatory authority on the Canada Lands; and the Oil and Gas Production and Conservation Act of 1979, which gives it authority to regulate drilling and other exploration operations.

At headquarters in Ottawa, COGLA is divided into six branches, which have administrative, regulatory and policy responsibilities in virtually every area of hydrocarbon activity. These branches include the Land Management Branch, the Resource Evaluation Branch, the Environmental Protection and Engineering Branches, the Canada Benefits Branch and the Policy Analysis and Coordination Branch.

In addition, COGLA's regional offices in St. John's, Halifax and Yellowknife and the branches receive input and support from other federal government departments that also have regulatory responsibilities in the offshore. These include the Canada Coast Guard on marine matters, Environment, and Fisheries and Oceans on environmental concerns, the Canada Employment and Immigration Commission with respect to employment considerations, and the Department of Regional and Industrial Expansion for matters pertaining to the development of industrial strategy.

### Review 83-84

In 1983, COGLA negotiated 36 exploration agreements with petroleum companies in the North. The companies committed themselves to drilling up to 45 wells over the period covered by the agreements, which generally last from one to five years. Total estimated value of these drilling programs is more than \$2.5 billion.

### Mainland Region

In 1983, Esso Resources Canada Limited continued work on its Norman Wells Oilfield Expansion Project, which began in 1982. Fifty-seven wells were drilled and four of six artificial islands to be constructed in the Mackenzie River were completed. Administration of design approvals on the Norman Wells project is COGLA's responsibility. In 1983, COGLA carried out surveillance of the drilling, production and construction operations, which included regular on-site drilling and safety inspections. Production facilities related to the existing refinery and the proposed central processing facility were also inspected. All production and injection wells and testing procedures for the pipeline gathering system were checked. Officers monitored compliance with environmental protection standards, such as oil spill prevention and clean-up measures, and water quality.

In 1983, 27 exploration agreements were concluded in the Mainland Region. Under these agreements, which have terms ranging from one to five years, petroleum companies committed themselves to drill up to 30 wells. Total costs associated with these drilling programs are expected to be in the range of \$230 million.

Aside from development drilling at Norman Wells, three wells were drilled in the Mainland Region. All were dry and abandoned in 1982 - 83 winter drilling season, and a fourth well was spudded late in the year.

Most drilling in the Mainland Region resulted in short-term employment opportunities for residents of nearby areas. More than 33 per cent of the 275 jobs created by these drilling programs were filled by northern residents. The Norman Wells project created job opportunities for more than 1,000 residents of the Yukon and the Northwest Territories. Approximately \$64 million has been invested to date as a result of contracts signed between Esso Resources Canada Limited and Interprovincial Pipelines (NW) Ltd.

### Mackenzie Delta-Beaufort Sea Region

In 1983, eight exploration agreements were concluded. In the Beaufort, operators committed themselves to drill up to 15 wells, and total costs associated with their drilling programs over the periods of the agreements are expected to be approximately \$2.3 billion.

In 1983, 12 exploratory wells were either spudded or re-entered. Four drillships, three artificial island-based drilling rigs, one conical drilling unit and one land-based rig were active in this region. Because of increasing drilling activity, COGLA opened an inspection office in Inuvik with two, fulltime inspectors. The inspectors are responsible for both offshore sites and land rigs. The activities of this office will supplement those of COGLA's office in Yellowknife.

Drilling operations created 2,000 job openings for Canadians, over 620 of which were recruited from 30 northern communities. Almost 100 per cent of the Beaufort Sea workforce is Canadian.

Formal training programs to enable northerners to assume positions in the petroleum industry continued in 1983. Some of this training consists of Canadians working on the job with non-Canadians to enable the former to eventually assume relatively senior positions on drilling programs.

Total operating expenditures of drilling programs in the region was approximately \$658 million. Almost \$480 million (73 per cent) was spent purchasing Canadian goods and services. Over 10 per cent of the Canadian expenditures were made in the Mackenzie Delta-Beaufort region.

#### *Arctic Islands*

In 1983, no exploration agreements were concluded. This was because exploration over the next five years was covered in 21 agreements that were concluded in 1982 with Panarctic Oils Ltd., the operator in the area. Five wells were completed in 1983.

Operators spent a total of \$74 million in seismic and drilling expenditures in 1983. Of this, 78 per cent, or \$58 million, was spent on Canadian goods and services. Approximately four per cent was spent in the region.

During the seven-month season, there was a monthly peak of 237 jobs, of which 47 were filled by Inuit hired from the communities of Pond Inlet and Arctic Bay. The remaining 190 were filled by Canadians recruited throughout the country.

#### *Hudson Bay*

In 1983, more than 8,000 kilometres of seismic were shot, creating a total of 34 jobs on seismic vessels. Twenty positions were filled by Canadians and 14 by non-Canadians. Native persons from the region were hired as environmental observers. Canadian Occidental initiated an extensive environmental overview of the Hudson Bay region. Total spending relating to the seismic activity was \$7 million, of which approximately 35 per cent accrued directly to Canada. Support services for the seismic program, such as crew transfer and emergency evacuation, were again provided using helicopters based on Churchill. In May, 1983, the Hon. Jean Chrétien, Minister of Energy, Mines and Resources and the Hon. John Munro, Minister of Indian Affairs and Northern Development, approved the establishment of a Hudson Bay Oil and Gas Committee to represent residents of the region who may be affected by hydrocarbon exploration activities.

# Environment Canada

## Atmospheric Environment Service

### Economic Function: General Government Services

#### Responsibilities

The Atmospheric Environment Service (AES) provides services and information relating to weather, climate, ice and air quality. The Service's activities contribute to the safety of Canadians and the security of their property. AES services include historical, current and future information on weather, climate, sea-state and ice conditions for all areas of Canada and contiguous waters. Through its observation and communication networks and Arctic forecast systems, AES receives and processes surface observations and upper air information throughout the year, conducts ice reconnaissance missions and provides consultation on, and forecasts of, atmospheric, ice and sea-state conditions.

The Service is involved in northern development and exploration through its participation in the federal Environmental Assessment and Review Process (EARP). Because concern for environmental quality has been increasing in recent years, the AES has become more involved with air quality. It has helped to develop national objectives for the quality of the ambient air and has carried out research, provided information about the environmental aspects of acid rain and toxic chemicals, and has participated in international air quality negotiations.

#### Review 1983-84

AES continued to provide support to other departments and agencies (seismology and geomagnetic programs for EMR; communication installation support to DND, etc.), and appropriate weather support to scientific expeditions, such as the Finnish trek to the North Pole in March-April, 1984.

Plaques, commemorating the 35th anniversary of the establishment of High Arctic Weather Stations (HAWS), were presented at Eureka and Resolute in July, 1983 and at Mould Bay in January, 1984.

A modular weather station was opened at Pond Inlet in October, 1983. Construction of a new upper-air operations building at Norman Wells was near completion at year end. New hydrogen gas generators were installed at a number of Arctic Stations and a major upgrade of meteorological instruments was initiated at several sites.

Additional improvements were made to the communications facilities in the North, including successful trials of satellite links to Frobisher Bay from both Montreal and Edmonton, and of an experimental meteorburst communications system between Sachs Harbour and the Beaufort Weather and Ice Office at Tuktoyaktuk. New software for data communications terminals, to improve message handling capabilities, was installed at a number of weather stations in the North. A tripartite agreement was signed by AES, the Department of Transport and the Department of National Defence for the High Arctic Communications System which has been operating successfully on Northern Ellesmere Island since September, 1982.

Two studies were commissioned by AES for 1983. The Clarke Institute of Psychiatry Study on "Work Conditions in Isolated Environments" completed Phase B of an investigation of stresses and problems involved in living and working in isolated environments. The report of the Harrison Study "High Arctic Weather Stations - Their Future" completed in December, 1983, was distributed to other appropriate government departments and private agencies.

Contracts with several native co-operatives and native people for the provision of meteorological and housekeeping services were issued.

Special weather briefings were given for ministerial visits to Inuvik, Yellowknife, and Tuktoyaktuk.

An Arctic Aviation Treasury Board Submission for Aviation Weather Services North of 60°N was approved.

Scientific Services Division staff were actively involved in a number of studies, planning meetings and other activities such as public hearings on the Beaufort Sea; an Arctic Wind Assessment Project; monitoring of Arctic haze and of the effects of CO<sub>2</sub> on the Arctic environment; planning for surface water chemistry monitoring in the Northwest Territories; involvement in the Mackenzie River Basin study on water quality and support to an air pollution study in the Yukon River Valley.

Research continued in a number of areas. Included were experiments to measure concentration of airborne pollutants and the development of forecast models for surface winds; iceberg deterioration and drift; freezing spray; ocean waves; storm surges and marine oil spill trajectories.

Work was undertaken on developing design climatologies for the offshore areas of the Canadian Arctic, and further development of the software packages to facilitate analysis of data was carried out. A program to investigate the possibility of examining and monitoring climatic change in permafrost zones was initiated, and a draft version of the regional climatology of the Yukon was completed.

Planning to enable the provision of year-round ice information services in the Arctic was begun. This service will be available in 1986.

#### Plans 1984-85

Improvements of services to aviation will include the preparation of terminal forecasts for five additional sites in the Eastern Arctic; initiation of transcribed weather broadcasts from Yellowknife, Inuvik and Cambridge Bay and the installation of APT satellite receiving antennae at Yellowknife and Inuvik.

The motion and frequency of icebergs in marine areas from Lancaster Sound to Davis Strait will be studied further. Modelling and forecasting techniques will be developed to enhance year-round arctic ice information support to offshore activities.

Work will continue on the adaptation and evaluation of weather, ice and environmental forecast methods and systems for the North. Research will continue into processes of pollutant transport, removal and effects. Air monitoring efforts will be consolidated at Alert, as of June 1984.

Development work on offshore climatologies will continue, with emphasis on wind, wave and climate change aspects.

In addition to operating and maintaining the present program, AES will continue to co-operate with the territorial governments, scientific agencies and industry to facilitate effective planning, improve services and ensure protection of the environment.

## *Central Services Directorate*

### **Responsibilities**

Central Services Directorate (CSD) provides through its Ice Branch, information to support transport and resource exploration needs in the Arctic. It also provides computing services; technical and professional training; maintenance support for data acquisition networks; and expertise for developing and using atmospheric instruments and systems.

### **Review 1983-84**

An experimental meteorological communications system between Sachs Harbour and the Beaufort Weather office at Tuktoyaktuk to transmit weather data was installed and operated in conjunction with Dome Petroleum of Calgary. The successful performance of the system resulted in plans for an expanded system to be installed in 1984-85.

A field trial using ANIK satellite communications facilities to provide on-line computer access from the Frobisher Bay Weather Office and the Alberta Weather Centre computer system in Edmonton was successful.

The information services provided by Ice Branch (current and forecast ice conditions, consultation, climatology) continued to increase in scope. In April 1983 a third "ground truthing" experiment relating to the microwave signatures of ice, this time under conditions with known "second-year" ice, was successfully completed at Mould Bay.

Plans were laid to provide year-round ice information services in the Arctic beginning in 1986. To this end, a DASH-7R has been ordered to serve as the third ice reconnaissance aircraft. All three aircraft will be equipped with "all-weather" remote sensing equipment, a semi-automatic data integration and analysis system and secure high-quality communication systems. Tenders have been called for building hangars at Inuvik and Resolute to ensure the service's effectiveness. Work has begun to upgrade the facilities and capability of the Ice Centre in Ottawa. The systems will be further developed to provide a year-round ice information service.

The Training Branch continued to provide formal weather observing courses for staff assigned to the DEW Line and AES Weather Stations in the Arctic. Courses were held at the training centre in Winnipeg, Manitoba and the Transport Canada Training Institute in Cornwall, Ontario. The Branch worked with the Northwest Territories Government to train staff during the year. Examinations were provided for training courses of Observer-Communicators for Arctic Community Airports.

### **Plans 1984-85**

A prototype meteorburst communications system is planned for Mould Bay, Sachs Harbour, Tuktoyaktuk and Yellowknife for 84-85, which if operationally acceptable, will replace the present Radio teletype system at Mould Bay and will relieve overloading on the present circuits at the other locations.

The National Weatherfax Network 1801 will be extended to Frobisher Bay in the summer of 1984. All chart transmissions from CMC in Montreal will be received at Frobisher using dedicated ANIK satellite communications facilities. A further extension of the network to Resolute Bay is being considered for 84-85.

Training Support Services for all weather-observing programs in the North will be provided at the same level as in 1983.

## *Atmospheric Research Directorate*

### **Responsibilities**

The Atmospheric Research Directorate (ARD) advances knowledge and understanding of the nature and behaviour of the atmosphere and its constituents and their interactions with man, his activities and other components of the natural environment.

### **Review 1983-84**

Meteorological Services Research Branch (MSRB) researched and developed methods and systems for forecasting weather, ice and environmental parameters in the North. In particular:

- Empirical weather prediction methodology was applied in developing forecast equations of surface wind at Canadian airports, including some northern locations. The feasibility of forecasting cloud ceilings and visibility in the southern Beaufort Sea by empirical methods was investigated.

- A model to predict the deterioration of icebergs was developed and tested on selected cases. Additional testing of a berg drift forecast model was carried out and a method of using observed berg drift for determining near-surface ocean currents was developed. The plan is to use ocean currents so determined for input to the berg drift forecast model.

- Work continued on upgrading the sea ice and ice thermodynamics forecast models for application in the Ice Branch ice forecasting system. Using climatological data at several northern locations, the ice thermodynamics model was found to simulate very closely the average dates of freeze-up and break-up for these locations, thus indicating possible applications in climatological studies.

- The quality of surface wind analyses and forecasts from the numerical weather prediction models at Canadian Meteorological Centre was determined by comparing these data with available ship reports and Seasat data in the north. The results will provide useful information on the potential of winds from numerical weather prediction models for operating ice and environmental forecast models.

- A prototype freezing spray forecast system was implemented at Canadian Meteorological Centre and evaluated for correct performance.

- Further testing was carried out on a comprehensive marine oil spill trajectory forecast system for open seas. Planning to study the problem of spill movement in the presence of unconsolidated sea ice was begun.

- An ocean wave forecast system was evaluated and a cooperative activity was developed to evaluate an industry-operated version of the system for the southern Beaufort Sea with data obtained in the summer of 1984.

- The feasibility of applying a storm surge forecast model in the southern Beaufort Sea was investigated and initial planning for this adaptation of the model was carried out.

air Quality and Inter-Environmental Research Branch continued to measure, at Mould Bay, Alert and Igloolik, the weekly-average concentration of airborne pollutants originating from mid-latitudes. In addition, light scattering measurements related to visibility were conducted on a continuous basis at Mould Bay and Igloolik as part of an international study of the nature and origin of "Arctic Haze", a wintertime phenomenon caused by man-made particulate matter.

#### **Plans 1984-85**

Work will continue on the adaptation and evaluation of weather, ice and environmental forecast methods and systems for the North. Specific plans include: development of empirical cloud forecast equations at some northern locations; comparison of various formulations of wind-driven water currents for application in environmental prediction models; evaluation of the freezing spray forecast system; evaluation of empirical wind forecast equations for some northern airports; introduction of a multi-category ice thickness scheme in the regional sea ice forecast model; a comprehensive evaluation of the parametric wave forecast system for the Beaufort Sea and the mounting of a storm surge forecast model in the southern Beaufort Sea.

Air monitoring efforts will be consolidated at Alert, as of June 1984. Research will continue into processes of pollutant transport, removal and effects. In March 1985, as part of an intensive surveillance program using aircraft from several countries, the horizontal and vertical extent of pollutants will be studied.

#### **Canadian Climate Centre**

##### **Responsibilities**

The Canadian Climate Centre (CCC) provides the climate data, climate forecasts and information services necessary to improve the understanding of the effects on climate of increasing atmospheric pollutants, and the socio-economic impacts of such effects. The effects of climate variations are also studied.

The CCC is the lead agency for the Canadian Climate Program, a national program to coordinate climate-related activities in Canada.

#### **Review 1983-84**

Work on developing design climatologies for the offshore areas of the Canadian Arctic focussed on the Hudson Bay and High Arctic regions. As a necessary first step, an extensive comparison of surface winds determined from a wide variety of sources (including land-based stations, ships, gridded-surface pressure data) was undertaken. Literature on climatic change in Arctic Canada was examined and summarized to provide a perspective on the applicability of the existing data base for supplying long-term design information. Further development of software packages intended to facilitate analysis of offshore-related data was carried out.

A program to investigate the possibilities of examining and monitoring climatic change in the discontinuous and adjacent continuous permafrost zones was begun. A feasibility study for utilizing a network of ground temperature measuring stations and an analysis of reconstructed historical climate data from several locations in the discontinuous zone were carried out.

The regional climatology of Yukon was completed in draft version. Progress was made in developing the software package for analyzing high and low pressure system movements.

In cooperation with the National Research Council, a study was undertaken of sea-ice interaction around a small arctic island (Adams Island) to serve as an analog for the forces sea ice might impose on an offshore drilling structure. A mesoscale climate network for obtaining wind and temperature information in the 10-metre layer adjacent to the ice surface was designed and installed.

#### **Plans 1984-85**

Development work on offshore climatologies will continue, with emphasis on wind, wave and climatic change aspects.

Details of the permafrost monitoring program will be finalized and work on assembling and integrating proxy data such as reconstructed historic data and tree-ring records, will continue.

The Yukon climatology will be completed and a user's handbook for the pressure system software package will be prepared. Some analysis of information generated by the latter package will be undertaken.

Participation in the NRC Adams Island study will continue for a second field season. Support to DND will be provided by supervising the development of characteristic atmospheric profiles over Canadian coastal areas, particularly in the Arctic. These profiles will be used by DND for assessing information from TEAL RUBY, a military surveillance satellite.

#### **Administration Branch**

The Administration Branch provides financial, material management, library and general administration services to AES headquarters elements, AES Regions and those organizations whose central elements interface with AES Headquarters.

#### **Review 1983-84**

Inspection visits were made to Resolute, Mould Bay, Eureka, Alert, Norman Wells, Inuvik, Sachs Harbour, Whitehorse, Churchill, Coral Harbour, and Baker Lake. Comprehensive health, safety and fire protection inspections were conducted at each site. Training sessions were given to staff while on site. Visits were made to Resolute, Mould Bay and Eureka, in January 1984, to assess the environmental and living conditions, from a health and safety point of view, during the dark period.

#### **Plans 1984-85**

Annual inspection visits will be made to the High Arctic Stations.

#### **Field Services Directorate**

##### **Responsibilities**

The Field Services Directorate (FSD) provides up-to-date weather information, public and marine forecasts, and warnings to most of the large communities in the North. Weather services and consultation are provided to major industries, such as transportation and resource exploration, as well as to environmental and regulatory agencies. FSD operates five data-gathering networks, automatic stations, satellite read-out stations, the Canadian Meteorological Centre (CMC) in Montreal, the Arctic Weather Centre (AWC) in Edmonton, the Yukon Weather Office

located at Whitehorse airport, several weather services offices such as in Inuvik and Frobisher Bay, three scientific support offices, and the Beaufort Weather and Ice Office (BWIO) at Tuktoyaktuk. A modern communications system relays information to and from weather stations across the North.

### **Review 1983-84**

To mark the 35th anniversary of the establishment of the High Arctic Weather Stations (HAWS), commemorative plaques were presented at Eureka and Resolute in July 1983 and in Mould Bay in January 1984.

An antenna enabling reception of TV and FM stereo programs was installed at Mould Bay. At Alert, an extension was added to the Upper Air Operations office in October-November 1983 to provide environmentally-controlled space for aerological computer equipment known as ADRES. Renovations were made to similar facilities in January-February 1984 in Mould Bay and Coral Harbour. Western Region has implemented a back-up system between stations in the event of a problem with ADRES.

The HAWS and other AES isolated weather stations continued to serve as bases for scientific projects and field studies by providing the necessary support services for scientists and technicians. Services were provided to small groups at Alert, Clyde, Resolute and Sachs Harbour in 1983. Major projects were accommodated in Mould Bay and Eureka. RADARSAT (an international project comparing ice types and structure depicted in satellite imagery with ground truthing data) re-commenced on-site research at Mould Bay in March 1984.

AES conducted seismology and geomagnetic programs for Energy, Mines and Resources (EMR) and provided support to EMR staff at a number of Arctic Weather stations, such as Inuvik, Whitehorse, Baker Lake, Sachs Harbour, Alert, Frobisher Bay, and Mould Bay. AES continued to support DND's communications installation at Eureka, Polar Continental Shelf Project (PCSP) activities in the High Arctic, air quality and carbon dioxide monitoring at Mould Bay and Alert, an ozone program at Resolute and National Research Council's neutron monitor gamma-ray project at Alert. Appropriate weather support was also provided to expeditions, as necessary, including tourist flights to Northern Ellesmere Island and a trek to the Pole by a Finnish group in March-April 1984.

At Norman Wells, construction of the new Upper Air Operations Office is nearing completion. A plan has been submitted for a new fourplex and facilities refurbishment at Cambridge Bay, and for facilities refurbishment at Sachs Harbour. In October 1983, a new modular weather station was opened at the Pond Inlet airport. The 10-year old former office was vacated, allowing the community to expand. Some piles have recently been put into the ground for two new AES dwellings at Baker Lake. These houses will incorporate prefabricated polyurethane 'coldstream' panelling. Programmed renovations to all radiosonde tracking equipment continues. New 7-cell hydrogen gas generators for the upper air program have now been installed at all the HAWS, and new 5-cell generators have been installed at Sachs Harbour, Fort Nelson, Churchill, Hall Beach and Inoucdjouac. Over the new 2 years, 8 other Arctic stations will have new generators installed. A new hydrogen balloon inflation building was commissioned at Sachs Harbour.

Communications and computers are vital components of AES' weather services delivery system. In the fall of 1983, the conversion phase commenced from the CYBER to the new CRAY vector computer at the Canadian Meteorological Centre (CMC) in Montreal. Testing was completed and the new super computer was accepted in December 1983. In conjunction with the Department of Communications, CMC participated in a 6-month trial of transmitting weather and ice facsimile charts via satellite from Montreal to the Frobisher Bay Weather Office; and for 4 months, a satellite link was operated between Edmonton and Frobisher Bay. Both trials were successful. Digital facsimile transmission was introduced at the Arctic Weather Centre. A trial of meteorburst communications equipment was carried out in September 1983 between Sachs Harbour and Tuktoyaktuk. It appeared to be flexible, easy to operate and cost-effective. AES managers are continuing their efforts to improve communications in the North using the latest technology.

The current Work and Cost-Sharing Agreement between DOE/AES and DOT/CATA is under review in Central Region, Winnipeg. Discussions were held with USAF officials in the fall of 1983 regarding the American proposal to modernize the entire DEWLINE chain of radar sites. A tripartite agreement was signed by AES, DOT/CATA and the DND concerning the High Arctic Data Communications System which has been operating successfully in Northern Ellesmere Island since September 1982. Contracts for the provision of meteorological services and housekeeping services were re-negotiated with several native co-operatives and native people to maintain programs at Pond Inlet, Old Crow, and Cape Dorset. Contracts at Clyde and Sachs Harbour continue in effect. Extensions of the observing programs to 24 hours commenced in April 1984 at Clyde and Cape Dorset.

Meteorological information, forecasts and consultation services continued to be provided for a variety of programs and activities in the North. AES continued supporting Northwest Lands and Forests in the N.W.T. by providing weather information and forecasts specially tailored for the Forest Fire Suppression Program at Fort Smith and by supplying a meteorologist from Whitehorse as an instructor in the GNWT's training program. Discussions were held with the president of Northwest Territorial Air concerning aviation weather services. A terminal forecast verification program has been implemented at Whitehorse. In May 1983, AES commenced issuing a forecast bulletin for the City of Yellowknife. In mid-June 1983, weather information and forecasts were provided for the Northern Native Broadcasting program originating in Whitehorse. Weather offices at Inuvik, Resolute and Frobisher Bay continued to support domestic and international aviation activities with aviation weather services. The Arctic Aviation Treasury Board submission for Services North of 60°N was approved, and will result in implementation of improvements over the next five years. The Beaufort Weather and Ice Office operated for the 1983 drilling season providing meteorological services to Dome, Gulf and Esso from early June to December out of Tuktoyaktuk, and will re-open in June 1984. BWIO activities continued during the winter of 1983-84, with communications between AES' forecast centre in Edmonton and Dome's offices in Calgary.

Meteorological data were acquired from 49 synoptic weather stations and seven automatic stations. Data were also provided from 14 aerological stations. The climatological network comprises 104 locations in the territories which provide extreme daily temperatures, precipitation and other weather information.

Non-standard meteorological data from PCSP's arctic bases have been retrieved and added to AES's data bank. A new automatic MAPS station was commissioned at Camsell River, N.W.T.; and the MARS II installation was removed at Radium, N.W.T. Reports were obtained from seven ships during the navigation season. A major upgrading of meteorological instrument areas occurred at Faro, Paulatuk, Fort Simpson, Cambridge Bay, Sachs Harbour, Tuktoyaktuk, and Pond Inlet.

Three more Arctic Aviation Weather Reporting Stations (AAWRS) were commissioned in 1983 at Beaver Creek in the Yukon, and at Fort Liard and Fort Norman, N.W.T. There are now 28 AAWRS operating in the territories - 7 in the Eastern Arctic, 6 in the Central Arctic, and 5 in the Western Arctic. Contracts to operate the meteorological programs and AAWRS with local Inuit co-operatives are still in force at Pond Inlet, Cape Dorset and Old Crow. The site was relocated at Paulatuk; new cabling was installed at Fort Resolution; a site was selected at Fort Franklin; and eight new

Observer-Communicators were certified in the Eastern and Western Arctic. One Private Aviation Weather Reporting Station (PAWRS) continues to operate at Rae Point.

Six more buoys were deployed by the Department of National Defence in August 1983 over the frozen Arctic Ocean. Another buoy was placed on an ice island northwest of Ellesmere Island, where a research site may be established by EMR/PCSP. The Arctic Basin Buoy Program, launched in October 1981, makes data available internationally from the polar ocean by satellite communication.

Regional Scientific Services Division staff activities included preparing for and participating in public hearings on the Beaufort Sea in October 1983 in Resolute and Inuvik; completing and reporting on the study of the effects of artificial islands on landfast ice regimes in the Beaufort Sea; initiating an Arctic Wind Assessment project; reviewing a quarry proposal for the North Yukon slopes; monitoring Arctic haze and the effects of CO<sub>2</sub> on the Arctic environment; planning for surface water chemistry monitoring in the N.W.T.; involvement in the Mackenzie River Basin study on water quality and quantity; providing environmental response to GNWT's development policy; preparing a climatology of the Nahanni area for Parks Canada; reviewing an article on climatic variation in the boreal forest zone of the N.W.T.; supporting an air pollution study in the Yukon River Valley; and co-ordinating data collection from a mini-network in the Great Bear-Great Slave Lakes for an EMR study on water levels.

#### **Plans 1984-85**

Improvement of services to aviation north of 60° will include the preparation of terminal forecasts for about five sites in the Eastern Arctic; on-going staffing of Fort Reliance; location of another AES inspector at Whitehorse; initiation of transcribed weather broadcasts from Yellowknife, Whitehorse, Inuvik and Cambridge Bay aeradio stations; and the installation of APT satellite receiving antennae at Yellowknife and Inuvik. The observing program will be increased at Broughton Island, and an AAWRS will be established at Haines Junction. A meteorological information display screen will be installed in the Yellowknife Weather Office.

The Beaufort Weather and Ice Office (BWIO) will again operate at Tuktoyaktuk from June through to December 1984, and the CMC will provide long range consultation service. DND will deploy another 8 buoys as part of the Arctic Basin Buoy Program in 1984. One buoy will be deployed in northwestern Hudson Bay. Computer-based, real-time forecast models of pack ice movement, ice thickness, wind, waves and iceberg movement will be tested.

Studies will continue of the motion and frequency of icebergs in marine areas from Lancaster Sound to Davis Strait, using satellite navigation and radar. This information will be utilized in modelling and forecast technique development to enhance support to offshore activities.

AES, in cooperation with COGLA, is involved in comparison tests of radars to detect icebergs; truthing will be provided by MOBIL Oil with funding from ESRF.

The construction of two houses at Baker lake and the upper air station at Norman Wells should be completed; as should the re-location into the new air terminal, of the Weather Office at Frobisher Bay. A facility will be installed in Frobisher Bay to receive routinely, facsimile charts via satellite. The saltwater desalination project will be tested at Eureka. Heat recovery/exchanger systems will be serviced in Mould Bay and Eureka. Incandescent runway lighting will be installed at the Mould Bay airstrip. A new personnel support and operations centre will be designed for Mould Bay. New hydrogen generators will be installed at Norman Wells and Coral Harbour.

AES will continue to provide forecasts for low-level weather conditions over the coastal waters between Baffin Island and Greenland to 68°N and up-to-date weather information, forecasts, warnings and scientific consultations for Arctic projects and activities, as well as climatological information for northern planning and development. Instruments, networks and communications systems will be inspected and maintained. Other special support services will be provided, on a cost-recovery basis, to assist agencies and expeditions in successfully completing their field project in the North.

## Canadian Forestry Service

*Pacific Forest Research Centre*

### Economic Function: Short Range Research

#### **Review 1983-84**

The program to develop renewable resource and forest management data for the Yukon Territory continued with the establishment of permanent plots to monitor the succession of vegetation on different site types following burns of different intensities. A vegetation survey was conducted on Southampton Island and Melville Peninsula NWT as part of the Land Use Information mapping program.

Seed certificate activities under OECD Seed Certification continued. Thirty four collection sites were certified and each of the seed lots tested for germination. Seed for export was valued at approximately \$350,000.

The final report on the fire history and management study of Kluane National Park was delivered to Parks Canada. Knowledge gained from this study was used in the successful Dall Sheep habitat prescribed burn conducted near Kluane Lake. The Forest Insect & Disease Survey monitored forest pests and damage along the Alaska and Klondike highways. Populations will be reassessed in 1984 as they could pose a threat to adjacent stands.

#### **Plans 1984-85**

Data will continue to be collected for renewable resource and forest management purposes. Vegetation in the permanent plant succession plots will be reexamined and additional plots established. Forest productivity measurements will be obtained from selected ecoregions.

Consultation will be provided as required to Parks Canada for preparation of fire management plans for Kluane Park.

Advice will be provided to Yukon Lands and Forests regarding fire management planning, implementation of the 1984 edition of the Canadian Forest Fire Danger Rating System and other fire matters upon request. The annual survey of forest insects and diseases will be conducted and reported.

*Northern Forest Research Centre*

#### **Review 1983-84**

The large scale photography system developed at NoFRC received final modifications for operational use for regeneration assessment and other resource inventories in the Yukon and Northwest Territories. As required, input was provided to the federal environmental impact assessment of proposed northern projects. Studies of the effect of climatic variations on forest productivity was continued along two north-south transects. Field performance plantations established near Fort Smith in the early 1970's were assessed. A publication of the results is presently being reviewed. Forest insect and disease surveys were continued in the Fort Simpson area and along the Little Buffalo and Slave Rivers.

The Centre continued to serve as a member of the NWT Fire Management Program Committee. The experimental burn in the NWT scheduled for July 1983 was cancelled.

#### **Plans 1984-85**

Field trials will be conducted to test the Large Scale Photo Sampling System for regeneration assessment. Participation in the federal environmental impact review process will continue. Forest insect and disease surveys will be conducted in the NWT. The Centre will continue to participate in the NWT Fire Management Program Committee.

*Inland Waters*

National Hydrology Research Institute

The National Hydrology Research Institute, established in Ottawa April 1, 1979, carries out scientific studies of surface water, ground water, and snow and ice. These studies include both process and applied research as well as modification and development of instrumentation and technology for laboratory and field analysis.

*Ground Water Division*

#### **Responsibilities**

The Ground Water Division research programs emphasize the development of hydrological techniques, methodologies and instrumentation for ground water resource evaluation and ground water aspects of environmental impacts.

#### **Review 1983-84**

Additional field measurements were carried out and water samples collected for chemical and isotope analyses, in a number of groundwater discharge areas along the Dempster Highway between Klondike Crossing and Fort McPherson, and in the Snag Creek/Mirror Creek area on the Alaska Highway.

The 1982-83 time-lapse films were retrieved. Cameras, and a number of ice-level gauges, were again installed in the Burlap Creek icing area, (km 1817.5) on the Alaska Highway. The section across the icing area was resurveyed a number of times to determine ground movements.

The time-lapse camera installed in September 1982 to monitor a polynya<sup>1</sup> at the head of Cambridge fjord on Baffin Island was retrieved in September 1983. Although bad weather obscured the point of interest on numerous occasions, the film has captured a useful record of the development of the polynya.

Development of the multi-channel data-recording system, designed to enable recording of progressive ground freezing, has reached the stage of field testing.

#### **Plans 1984-85**

Analysis and interpretation of field results and time-lapse photography from icing sites along the Alaska Highway will continue, as will interpretation of data on groundwater discharge areas.

A multi-channel data-recording system will be field tested during winter 1984-85.

<sup>1</sup> A polynya is a patch of open water in a sea ice field.

## Surface Water Division

### Responsibilities

In northern areas, the Surface Water Division conducts basic and applied research in the field of permafrost hydrology. It provides consultative services in northern water problems and carries out specific water-related studies both in support of the Inland Waters Directorate mandate and for other government agencies.

### Review 1983-84

Observations of break-up on the Liard River below Nelson Forks, and the Mackenzie River above and below the Liard confluence were made in April and May 1983. In the Fort Simpson region, energy balance data were gathered to study the weakening of the river ice cover prior to break-up. The progression and timing of break-up was monitored. Ice jams were studied intensively. An analysis of historic maximum water levels in the Fort Simpson region was done. The results were included in a report on the 1983 break-up prepared for the Water Resources Division, DINA.

A "hot-wire" device designed to measure ice thickness without the necessity of drilling the ice cover was successfully field tested on the Ottawa River and in the Mackenzie Delta. Work continued on devising techniques to measure ice jam characteristics.

During April and May, water temperatures were measured on the Liard and Mackenzie Rivers near Fort Simpson, beneath the intact ice cover prior to break-up, and during the break-up period. Water velocity profiles were also obtained at a number of locations before break-up.

On the lower Mackenzie and in the Mackenzie Delta, observations of ice break-up were made to augment the existing data base and continue the Mackenzie ice regime study. The progress of break-up was studied during May and early June from Norman Wells to the Beaufort Sea.

An investigation of the water level regimes of a variety of lakes in the Mackenzie Delta continued to provide baseline information for the assessment of the potential impact of increased flow regulation that will result if dams are constructed on the Liard River. Time lapse photography of water levels at nine sites within three study areas was obtained from

spring break-up until almost freeze-up (late April to September). Climatological data were collected at all study areas and investigation of water quality characteristics was continued, commencing with ice core analysis in April. This information is intended to provide some indication as to whether or not the Delta is a pulse stabilizing system. A report on the 1981 observations was completed, and analysis of 1982 and 1983 data has begun.

A study of the water balance of a "non-connected" lake in the Mackenzie Delta was begun in 1983. A research basin was selected, and instrumentation was installed. Initial measurements of groundwater conditions were carried out using the lake piezometers, and hydraulic conductivity of the bed material and groundwater outflow from the lake were estimated. Preliminary analysis of the individual components of the lake's water balance provided a rough estimate of the magnitudes to be expected.

A study to investigate the patterns and processes of channel changes in the Mackenzie Delta was begun in 1983. Seven bank erosion sites were selected, and two were outfitted for the acquisition of time lapse photography. Channel bathymetry, boundary materials and water velocity data were collected in order to clarify the processes of erosion, sediment transport and deposition. Through examination of aerial photography, it was possible to map the rates of channel migration, and a progress report on the first season's work was completed. A flow direction meter was also designed and successfully tested for use in this and related studies in the future.

East of the Mackenzie Delta, data were collected at three basin sites in the tagia zone south of Inuvik and at six basin sites in the tundra zone between Inuvik and Tuktoyaktuk. Surveys of culvert ice accumulation, river icings, late winter snowpack water equivalent, discharge and meteorological elements were made at appropriate locations in the basins. Reports on the 1981 and 1982 field seasons were completed.

Research has been completed on observations of seasonal river channel and streambed temperatures, from sites on Caribou Creek and Rengleng River near Inuvik.

### Plans 1984-85

#### A. Fort Simpson Region

Field investigations for ice jams on the Liard and Mackenzie Rivers near Fort Simpson will continue.

The refinement and evaluation of methods and instrumentation to monitor river ice will continue.

The study of the Liard River thermal regime will be continued.

- Data will be analysed to determine
- (a) heat flux from river water to the ice cover and
  - (b) total heat transfer by the Liard and Mackenzie Rivers.

#### B. Mackenzie Delta Region

Ice break-up along the lower Mackenzie River and throughout the Delta will be monitored by aerial photography, with emphasis on ice jam events.

Water levels in six delta lakes and three small channels will be monitored using staff gauges and automatic time-lapse camera systems. Snow survey and meteorological data will be obtained, and water temperatures and samples will be taken during short visits throughout the ice-free season.

Field studies will continue, to assess the water balance of a small "non-connected" lake and its surrounding drainage basin in the Delta.

To study channel bank stability and erosion, time lapse photography will be employed to monitor two very active sites. Bank erosion at six sites will be assessed via erosion pins. Data will also be obtained on channel bathymetry, flow structure in channel bends, and sediment transport.

The Inuvik-Tuktoyaktuk Highway hydrology study will continue for one more year. Snow survey and meteorological data will be obtained at sites along the proposed route of the Inuvik-Tuktoyaktuk Highway and at one site along the Dempster Highway south of Inuvik. Water Survey of Canada personnel will be monitoring the discharge of four small rivers during the open water season (Boot, Cabin, Ryan and Hans Creeks).

## *Snow and Ice Division*

### **Responsibilities**

The Snow and Ice Division studies paleoglacialogic evidence for climate change and hydrologic processes in the North and their impact on northern development. It researches the mechanical and electrical properties of snow and ice, examines glaciers, mountain snowpacks, snow metamorphism and other aspects of alpine hydrology, and develops and maintains an inventory of perennial snow and ice in Canada.

### **Review 1983-84**

In core related work, an area at the head of the Donjek Glacier (Yukon) was radar sounded and reflections obtained from a 1500 B.P. White River volcanic eruption at 450m depth. The analyses of the 103m Mount Logan core proceeds with assembly of data pertinent to the 1908 Tunguska meteorite event. Anion analyses indicate association with well-known volcanic events but no apparent trends that could be related to increasing global pollution levels. The time span of the core is now estimated to be 300 years. Spectral analysis of a 100 year oxygen isotope time series shows temperature correlations with meteorological records from Dawson, although there are some interesting anomalies, apparently related to the periodicities of astronomical phenomena. A tree-ring analysis of samples from the Saint Elias may help resolve some of the analytical difficulties.

### **Plans 1984-85**

The ice cores obtained from Mount Logan in 1981 will continue to be analyzed for oxygen isotope, chemical, gross B-activity, total gas and carbon dioxide contents. Tabulation of glacier inventory data for the glaciers of the Yukon Territory will be completed.

## *Water Planning and Management Branch*

### **Responsibilities**

This Branch undertakes water resource studies as well as programs to reduce flood damage and improve water management, and advises the Northwest Territories and Yukon on water planning and management matters. The Branch participates in environmental assessments of development projects.

### **Review 1983-84**

The \$2.2 million Yukon River Basin study to assess resource development alternatives in the basin was drawing to a close. At an 8 and 9 March 1984 meeting in Whitehorse, the Study Committee undertook an extensive review of the proposed study recommendations and prepared directives for preparation of the final study report. The expiry date of the Agreement has been extended from December 31, 1983, to September 30, 1984.

Work is under way on a draft Enabling Agreement and subagreements for implementing some of the recommendations contained in the 1981 Mackenzie River Basin Study Report.

A 3-year extension to the Canada-Northwest Territories Flood Damage Reduction Agreement and Memorandum of Understanding has been requested in order to complete flood risk mapping in the Northwest Territories. As part of the extension, the list of places to be mapped is expected to be revised to include Fort Liard and Nahanni Butte. Negotiations for a Canada-Yukon Flood Damage Reduction Agreement are temporarily "on hold" at the request of the Yukon Government.

### **Plans 1984-85**

To complete the Yukon River Basin study and report on resource development alternatives.

To draw up an Enabling Agreement for implementing some of the recommendations in the 1981 study report.

To continue to work toward effective flood damage reduction in the Territories.

## *Water Resources Branch*

### **Responsibilities**

The Water Resources Branch operates through two divisions, the Hydrology Division and the Water Survey of Canada Division. Across Canada there are eight Water Resources Branch regional establishments, six of which are located in Vancouver, Calgary, Regina, Winnipeg, Guelph and Dartmouth. The seventh office, established in 1980 is situated in Yellowknife, N.W.T., and the eighth in

Longueuil, Quebec. Water Resources Branch programs in the Yukon Territory are administered by the Vancouver Regional Office.

The responsibilities of the Water Resources Branch include collecting, processing, storing, analysing, interpreting and providing water quantity and sediment data for water resources management. The Branch also provides advice and assistance on various aspects of national water programs.

## *The Hydrology Division (Headquarters)*

The Division conducts analytical and interpretive studies designed to support and complement the basic data collection activities of the Water Survey of Canada Division.

## *Water Survey of Canada Division (Headquarters and Regional)*

### **Responsibilities**

The Water Survey of Canada (WSC) Division (Headquarters) provide technical support to the Survey's Regional Offices. It develops techniques, instrumentation and standards for the collection, computation and publication of hydrometric data.

The Division maintains data banks, does network planning for hydrometric stations, conducts non-routine hydrometric field surveys, measures the discharge rates of rivers under unsteady flow conditions, measures sediment deposition in reservoirs, lakes and rivers, and carries out morphological surveys and studies on river channels, drainage basins and estuaries.

### **Review 1983-84**

The first year of the five year Data Collection Platform (DCP) acquisition and installation program was completed. Of the 70 DCPs acquired by the Water Survey of Canada 20 were sent to Yellowknife for installation in the Northwest Territories and 5 to Vancouver for installation in the Yukon. Seventeen DCPs were installed at hydrometric sites in the territories, but eight did not provide data during the winter period due to insufficient capacity of the photovoltaic power supply systems. Solar panels have performed well and meet all specifications. An ECS/AES Data Communication committee was formed to review requirements and formulate a proposal for data communication. A report with recommendations will be tabled early in 1984.

## Regional Activities

In the Yukon Territory, the WSC operated 10 hydrometric stations, and continued to contribute data and information to various studies under the three year \$2.2 million Canada-British Columbia-Yukon planning agreement for the Yukon River Basin.

In the Northwest Territories, the WSC 37 operated hydrometric stations. Using data from DCP transmitted via satellite daily forecasts of water levels on the Mackenzie River were provided to various agencies including those dealing with navigation on the River.

The construction program included five new stations, two major reconstructions and a small storage building erected at Frobisher Bay.

## Plans 1984-85

The acquisition and installation of DCPs will mark the second year of a five year program. Of the 70 DCPs to be acquired in 1984-85, 22 are scheduled for installation in the NWT and 5 in the Yukon. Efforts will continue to develop ECS/AES capability to receive and communicate DCP data.

A review of the history and sedimentary processes and environments in the Mackenzie Delta will be supported and a consultant study of the Mackenzie River sediment transport, source and channel morphology will begin. This short feasibility study could lead to more extensive field investigations.

The Water Survey of Canada, will continue to operate the hydrometric network in the Yukon and Northwest Territories and in the north of all provinces except in Quebec. Processing of surface water data will be done entirely in the north using computer services based in Yellowknife. Hydrometric calculations will be facilitated with the use of a PRO-350 micro computer which processes data in-house and permits data users direct access to these data banks.

The Mackenzie River Delta network of 11 hydrometric stations will also be used to provide data for the calibration of a Delta flow distribution model.

## Water Quality Branch

### Responsibilities

The Water Quality Branch (WQB) collects, analyzes, interprets and disseminates water quality data. These data are obtained from hundreds of sampling sites across

Canada, including the Yukon and Northwest Territories, augmented by detailed information collected in comprehensive surveys. The data serve a wide range of users including the Department of Indian & Northern Affairs (DINA) and the North West Territories Water Board (and its Technical Advisory Committee) as well as other agencies responsible for managing water resources, for preparing environmental impact analyses, for planning studies and for developing interjurisdictional agreements.

Operations in the Yukon are carried out by offices in Whitehorse and Vancouver. Operational logistics in the Northwest Territories are coordinated through offices in Yellowknife and Regina. All data are subject to a quality control program and are coded into the National Water Quality Data Bank (NAQUADAT).

### Review 1983-84

Under the Yukon River Basin Study (YRBS) the Branch provides analytical support, assistance in network design and data interpretation. A report was prepared on the optimization of sampling frequency for a future monitoring program. This report was based on the analysis of one year's record from a network of stations in the basin. Routine water quality monitoring was started on the Teslin and Liard Rivers to determine long term trends in water quality due to land use developments.

In support of YRBS, a report was prepared on the dissolved oxygen (DO) levels under ice cover, based on field work carried out during 1982-83. During the winter months, significant depressions in dissolved oxygen relative to summer months were noted in the Nordenskiöld and Taklimi Rivers. The report suggests that changes in levels of dissolved oxygen may be correlated with high organic carbon levels.

Other studies in support of YRBS include a report on the use of HYDROLAB 800, an automated water quality monitor, and a report on the use of hot boxes for protecting equipment from extremely low temperatures.

For the Northwest Territories, the results of an analysis for water quality characteristics and trend development are published as Volume 9 of the Mackenzie River Basin Study Report. The results were obtained using all Mackenzie River basin data, formerly published in 1981 under the Mackenzie River Basin Study Program.

A biophysical overview of the Hay River basin, including an assessment of existing water quality was completed under a cooperative arrangement with the Government of the NWT. This agreement calls for a number of biophysical overviews of interjurisdictional basins. Under another agreement with the NWT, mapping of water resources began. This represents an initial step toward developing a Strategy Paper outlining WQB activities for the next five years in the North.

## Plans 1984-85

The monitoring station network is now at its planned complement of fixed stations, including the Keewatin sites, and a new station is to be added on the Liard River. This addition will broaden the water quality data base, facilitate long term trend assessment, and contribute to the understanding of river processes in northern Canada. During the 1984 break-up period, the runoff and the spring freshet will be extensively monitored at two locations in the Keewatin.

Mapping in the NWT will continue and overview reports on seven of the interjurisdictional basins will be undertaken in cooperation with the GNWT as part of the studies dealing with water quality aspects of the GNWT - DINA Land Use Planning Program.

The Branch will undertake an internal review of all WQB-Northern Program water quality management activities to determine the direction for future network design, monitoring strategies, and water quality planning activities, for the period 1985-1990.

The Branch will continue to cooperate with other services of Environment Canada and other agencies, in northern basin studies and other water quality management programs by providing analytical and interpretive support. In addition, a program report will be prepared by the Water Quality Work Group of the YRBS, summarizing the existing water quality information, and making recommendations for future studies.

## Environmental Protection Service

### Economic Function: Short Range Research

#### **Responsibilities**

EPS ensures that the federal government's environmental protection regulations are enforced. The Service controls air and water pollution, manages the disposal of waste, assesses and controls the environmental impact of pollutants and handles environmental emergencies. EPS provides departmental liaison with industry and provincial environmental protection agencies. District offices are located in Whitehorse and Yellowknife and provide the bases for northern operations.

#### *Environmental Strategies Directorate*

#### **Responsibilities**

The Environmental Protection Service ensures that sources of pollution at federal facilities are cleaned up and that new projects are environmentally acceptable. Pollution problems are identified and assessed and clean-ups developed in consultation with other federal departments. Environmental effects of new projects are assessed through a screening process.

In addition to carrying out work to minimize pollution at federal facilities, advice on the environmental effects of activities falling under federal jurisdiction is provided. EPS provides specific and indirect advice the later through guidelines and codes of good practice. In addition, EPS co-ordinates interdisciplinary reviews to assess the effects of federal activities on the environment. These reviews enable EPS to provide advice and assistance and recommend appropriate courses of action for governments, senior management and industry. The Program also implements the EPS role in the policy statement "DOE Role in EARP".

#### **Review 1983-84**

Yukon and Northwest Territories staff participated in reviewing the EIS for Hydrocarbon Development in the Beaufort Sea-Mackenzie Delta Region.

EPS Yukon represented the department on DIAND's Regional Environmental Review Committee (RERC) and coordinated the referral and review of material submitted to the Committee. Also EPS undertook a review of the material received from its own mandate perspective. The major activities related to the RERC involved potential development by Gulf Canada and Peter Kiewit Sons Ltd. on Yukon Slope.

EPS continued as a member of the Water Quality Working Group of the Yukon River Basin Committee. This multi-year study will end in July, 1984.

Sub-district offices were opened in Inuvik and Frobisher Bay. Liaison with other government departments, communities and the public was established in both areas.

EPS/NWT continued to provide support to the Arctic Waters Advisory Committee advising DIAND on the development of environmental operating conditions of offshore oil and gas operations.

#### **Plans 1984-85**

Activities in the Frobisher Bay and Inuvik sub-district offices will be expanded. EPS/NWT continue to provide support to the Arctic Waters Advisory Committee.

EPS will continue to provide a departmental focus on RERC as well as undertake its own review of development proposals submitted to DIAND and referred to RERC. An increased level of RERC/environmental assessment activity is expected.

#### *Environmental Protection Programs Directorate (EPPD)*

#### **Responsibilities**

EPPD ensures that an adequate information base to determine the status of environmental quality in Canada is identified and that appropriate environmental protection mechanisms are developed and implemented.

Main areas of technical activity are Commercial Chemicals, Waste Management, Industrial Programs and Technical Services.

#### *Commercial Chemicals*

#### **Review 1983-84**

EPS continued to chair a pesticide review committee to provide advice to the Yukon Government on a mosquito control program.

EPS Yukon collected abandoned capacitors containing PCB's<sup>1</sup> at two mines and continued its inventory of this contaminant.

EPS Yukon examined 45 samples of gasoline for lead content to test for compliance with Clean Air Act Regulations. A violation was due to poor handling practices by a service station operator. The operator was not prosecuted. EPS/NWT sampled gasoline from service stations and bulk plants in Norman Wells, Hay River, Fort Smith and Frobisher Bay.

#### **Plans 1984-85**

EPPD activity will continue to advise and comment on mosquito control programs. EPS will continue to encourage the Yukon Government to develop and administer pesticide control legislation.

EPS Yukon and NWT will continue the gasoline monitoring program.

#### *Waste Management*

#### **Review 1983-84**

EPS Yukon received a total of 12 pollution incident reports involving spills of oil or other hazardous materials. This number reflects a substantial drop compared to the last several years. EPS/NWT received a total of 118 spill reports and responded to selected potential major spills.

Enforcement under the pollution provisions of the Fisheries Act continued with two successful prosecutions: (1) Placer Development Limited for depositing diesel fuel into a small creek in the Howard's Pass area of Yukon; and (2) CanMar for spilling in Tuktoyaktuk Harbour, NWT. In addition, EPS/NWT laid two charges against Robinsons' Trucking Ltd. for diesel spills on winter roads.

Contingency planning was emphasized. Amendments and updates to the Yukon Disaster Committee Contingency Plan to Deal with Oil and Hazardous Chemical Spills were sent to plan holders. Northern Canada Power Commission completed and implemented a plan for its facilities in Whitehorse. Work began with the Yukon Transportation Association and petroleum handlers on the development of a cooperative oil spill response association to be set up in Whitehorse. EPS/NWT reviewed and

<sup>1</sup> PCB, Polychlorinated Biphenyls.

provided advice on Contingency Plans for Beaufort Sea, Norman Wells and mining operations.

Training of field staff from several government departments on the basics of responding to oil and hazardous chemical spills was carried out for the Environmental Protection Subcommittee of the Yukon Disaster Committee. A course entitled Hazardous Materials in the NWT: Spill Prevention and Response" was developed, prepared and presented in Yellowknife and Fort Smith.

A study on the "Feasibility of Designating Ocean Dumpsites in the Canadian Beaufort Sea" was completed. A workshop on ocean dumpsite designation in the Beaufort Sea was held in Yellowknife in June. Agreement with NWTG was achieved on dumpsite designation criteria, research and monitoring requirements and the need to address potential land use conflicts and to engage in public consultation.

The Service continued to administer the provisions of the Ocean Dumping Control Act in the Yukon and NWT through Regional Ocean Dumping Advisory Committee (RODAC).

EPS Yukon inventoried and inspected 100 abandoned waste dumps throughout the Yukon in order to assess environmental hazards. No sites found are believed to present a hazard, but landfill operation at active sites needs improvement.

#### **Plans 1984-85**

EPS Yukon and NWT will continue to respond to oil and hazardous chemical spills. Support to the Yukon Disaster Committee, Environmental Protection Subcommittee will continue with annual updates/amendments to the committee's contingency plan. Agreements on interdepartmental and intergovernmental cooperation when dealing with spills will be updated or newly developed to ensure that a system of reporting, alerting and monitoring continues to operate through Yukon.

Prevention activities will continue with facility inspections to assess hazards and potential for spills and pursuit of a formal referral system with YTG Protective Services for proposed bulk fuel storage facilities.

EPS Yukon will promote the recycling of waste materials by providing an advisory service.

EPS/NWT will develop guidelines for hazardous waste storage and transfer facilities and develop criteria in support of ocean dumpsite designation in the Beaufort Sea and Eastern Arctic.

#### *Industrial Programs*

##### **Review 1983-84**

EPS continued work with DIAND and DFO to develop guidelines for Yukon placer mining.

Field programs to assess the impacts of mining activity on receiving waters were undertaken at two mine sites in the Yukon, one placer and one base metal, during 1983.

EPS continued its involvement with DIAND's Land Use Advisory Committee by providing specific advice on operating conditions for over 150 land use applications during 1983.

Activity related to Beaufort hydrocarbon development included collection of baseline inventory information along the Beaufort Coast and on the Yukon North Slope, regarding anticipated and identified development areas.

Energy Research & Development projects were begun in the areas of marine dredging in the Beaufort Sea, abandonment of artificial islands, waste management in the Beaufort Region and spill detection technology. Government/industry steering committees were established for each R&D subject. All 1983-84 reports were completed.

A data report on the 1982-83 government/industry Beaufort Sea shorebase monitoring program was completed and distributed. Data interpretation was begun and a progress report completed. An abbreviated field program was carried out during the 1983-84 field season.

Advice was provided to the Water Board through membership on the Technical Advisory Committee (TAC).

Reports on the impact of mines on freshwater environment was initiated for Yellowknife Bay and Back Bay (Great Slave Lake), Prairie Creek (Mackenzie mountains), abandoned gold mines and the Thompson-Lundmark mine.

A report entitled: "A Report on Legislation and Terms and Conditions Pertaining to Uranium Exploration in the Northwest Territories" was completed.

Woodsmoke pollution of a suburb of Whitehorse, Yukon, continues to be an urgent concern. Sampling during the winter of 1982-83 proved that the pollution can be expected on one day in three during the heating season. The particulate matter contains a high percentage of polyaromatic hydrocarbons (PAH) in respirable particle sizes.

#### **Plans 1984-85**

Activities in relation to placer mining will continue, as will cooperation with DIAND, DFO and industry to implement specific aspects of the proposed placer guidelines and to coordinate technological research.

Receiving-water monitoring projects will continue to ensure that guidelines and standards are effective.

Participation in DIAND's Land Use Advisory Committee will continue. Increased activity over 1983-84 is anticipated in response to improving economic conditions.

A control strategy for woodsmoke pollution will be initiated in collaboration with the Government of Yukon and civic authorities.

The Service will continue to collect baseline information in relation to water quality and biological conditions in the Beaufort Sea Area.

Fact sheets on selected development projects in the NWT will be prepared and distributed. In addition, pre-development sensitivity assessments at major development sites will be conducted.

EPS/NWT will develop a strategy and initiate field trials for environmental monitoring guidelines.

## Technical Services

### Review 1983-84

EPS Yukon maintains a station in Whitehorse to monitor carbon monoxide, nitrous oxides and particulate matter as part of the National Air Pollution Surveillance network. EPS/NWT operated two high volume sampling stations in Norman Wells and one high volume station in Yellowknife. A draft surveillance report on the Yellowknife area was completed. Preparations to expand the system to include stations in Inuvik and Frobisher Bay were begun.

A comprehensive stack test at the Giant Yellowknife Mine was carried out to assess compliance with proposed arsenic regulations drafted under the Clean Air Act and to refine methods development for stack testing of gold roasting processes. A report was completed and distributed.

### Plans 1984-85

EPS Yukon and NWT will continue to monitor air quality as part of the NAPS network.

## Lands Directorate

### Economic Function: Short Range Research

#### Responsibilities

The Directorate conducts research, provides data and information on land characteristics and provides policy advice on nationally important land-use issues. To promote environmentally sound land planning and management, lands collects data, carries out research and plans programs in cooperation with other federal departments and agencies, thus ensuring that all programs comply with the guidelines of the Federal Policy on Land Use.

#### Land Resources and Data Systems Branch

### Review 1983-84

The Land Use Monitoring Division continued its research on and production of the land Use Information Series maps of the Northwest Territories. The Division compiled, drafted and printed 24 maps (scale 1:250,000) for the South Victoria Island - Northeast Keewatin area of the Northwest Territories. Research and surveys for a map-sheet of the Melville Peninsula - Southampton Island area were completed.

The Land Use Information Series maps are now available for most of the mainland area of the Yukon and Northwest Territories. Combining a wide range of data on renewable resources and the activities associated with them, the maps present information on wildlife and fish habitat areas, native hunting and trapping areas, development areas, mineral resources, historical sites and ecological characteristics. They contain also information useful to land-use administrators, planners and communities. The mapping program is financed jointly by Environment Canada and Indian and Northern Affairs Canada. Several other federal agencies also participate.

In conjunction with the mapping program, a background report on aquatic resources of islands bordering the Viscount Melville Sound area was published.

Also in conjunction with the program, the Ecological Research and Integrated Programs Division provided an ecological overview of the Melville Peninsula - Southampton Island region which included: ecodistrict map-unit boundaries; generalized descriptions of relief, landforms, geology, soils, vegetation and water features; climatic information and ecoregion descriptions; and a coastal classification.

Ecological baseline studies for the Mackenzie Mountains Region of the Yukon and Northwest Territories, the Lancaster Sound Region and for the adjoining Viscount Melville Sound Region were completed. The two latter studies also include data on the ice conditions, currents and wildlife of the marine environment.

Climatic ecoregions were delineated and described for the districts of Franklin and Keewatin. A Northern Wetland Study was completed for the Beaufort Sea Region and the Northwest Passage. Encompassing 19 maps (scale 1:500,000) it is accompanied by a report and fact sheets describing the distribution and nature of wetlands within an ecodistrict framework. Microcomputer software (LANDPLAN) was developed to facilitate land-use planning for the North.

### Plans 1984-85

The Land Use Information Series maps of the Melville Peninsula - Southampton Island will be completed. Field research and map compilation will be carried out for maps in the South Baffin Island region. Several reports and northern perspective maps relating to various aspects of this program will be published. The agreement between Environment Canada and Indian and Northern Affairs Canada is expected to be extended to 1988 to complete mapping north of 60°. The Ecological Research and Integrated Programs Division will provide a general ecological overview and a coastal classification for the Northern Land Use Information Series maps. Area-specific environment guidelines will be produced for the Mackenzie Mountains Region of the Northwest Territories. For the Beaufort Sea Region, new biophysical data will be compiled for integration into the existing ecological data base. For this region, data gaps will be identified along with research needs, and area-specific environmental guidelines will be initiated. The Division will cooperate with the Government of the Northwest Territories, to map the eco-sections of the Lake Harbour area of southern Baffin Island.

#### Pacific and Yukon Region

### Review 1983-84

The Land Directorate's regional office completed ecodistrict maps and descriptions for the Mackenzie Mountains. Preliminary maps for the remainder of the southern Yukon, except the Dawson map-sheet, were completed. Advice and services regarding land resources and ecological land classification were provided to the Yukon government and other government agencies.

### Plans 1984-85

None, due to termination of regional programs in this area.

## Canadian Wildlife Service

The Canadian Wildlife Service (CWS) conducts research, manages and administers programs under the Migratory Birds Convention Act and the Canada Wildlife Act. The Service co-ordinates federal, provincial and territorial action on common wildlife problems. It carries out surveys, develops inventories of wildlife and does research on wildlife species and their habitats. Finally, it collects and analyzes data on the animal population and studies wildlife diseases and the effects of toxic chemicals on birds and animals.

### Review 1983/84

Results of work related to caribou and polar bear, carried out under the CWS-DIAND-GNWT research agreement, are summarized below.

### Caribou

The second of four parts of a five-year study on the effect of fire on the health, movements and distribution of the Beverly herd of barren-ground caribou was successfully completed, with considerable support having been provided by the Fort Smith Hunters and Trapper's Association, CWS Wildlife Service and the Saskatchewan Department of Natural Resources. The study comprises three principal components:

- (1) An assessment of the adequacy of the present winter range conducted by monitoring changes in condition indices (weight and fat stores) over the winter period with comparisons made to other herds in areas where the burn rate has been much lower over the past 15 years.

- (2) Herd distribution and movement were monitored from October to May, and results are evaluated in terms of regional herd distributions and frequencies, local burns of various ages, sizes and types, terrain and cover types, and snow conditions.

- (3) The winter ranges are evaluated in terms of the frequencies of cover types and their post-fire age as well as changes in the cover and the biomass of caribou ranges at various after-fire intervals.

The main herd spent much of the winter of 1983-84 on the tundra and in the edges of the forest. In November and December, it travelled from the eastern portions of the range to the western limits

north of the east arm of Great Slave Lake and returned to the Artillery Lake-Sifton Lake region in February. Physical condition of individuals changed little from November to the end of March. Physical condition and pregnancy rates of that group were about average. The second group, which wintered in the forest in the Winchester Lake region, was found to be in excellent physical condition. Pregnancy rates were exceptional. Habitat studies included two months of field work in the Monscho Lake region in July and August of 1983.

### Polar Bear

Long-term studies of the behaviour of polar bears in relation to seals and sea ice conditions and a study of the importance of polynyas to over-wintering marine mammals in the High Arctic were continued. Age determination of polar bears captured in the CWS programs and killed bears from some areas, was performed. The study of the reproductive ecology of female polar bears in northern Manitoba was continued. Several hundred polar bears have been tagged and data were and will continue to be collected on fidelity to maternity denning areas, age-specific reproductive parameters, and condition.

### Migratory Birds

#### Whooping Cranes

The Canadian Wildlife Service carried out aerial surveys in 1983 to monitor cranes and nests in or near Wood Buffalo National Park (WBNP) and to collect eggs for the cooperative USA-Canada foster parent program. At least 24 nests were constructed, three of which were destroyed by predators. Nineteen eggs were collected from nests with clutches of two. Twenty-one were left for hatching by wild parents. At least 14 chicks were observed later in the summer in the Wood Buffalo population. Of 19 eggs collected, 18 with live embryos were flown to Gray's Lake National Wildlife Refuge in Idaho, as part of a cooperative USA-Canada foster parent management program. Sixteen were placed in nests of greater sandhill cranes and two were shipped to Patuxent Research Centre in Maryland. Eleven chicks, originated from the Wood Buffalo

egg transplant, eventually fledged and migrated with their foster sandhill parents to the winter range in New Mexico.

Production in the wild Wood Buffalo population was not as successful. Of the 21 eggs remaining, 14 hatched, but only 7 young eventually migrated to the Aransas National Wildlife Refuge (ANWR). Causes of breeding grounds mortality were not determined, but predation is suspected.

As of January 1984, the world population of whooping cranes was 144. This population includes 107 wild and 37 captive individuals. The WBNP-ANWR population totalled 75.

### Northern Development Impact Assessment

The fourth year of a five-year study of seabirds and their dependence on the ecological process of polynyas was successfully completed in the Cape Vera-Hellagat polynya area. The study included distribution surveys, food habits and availability, nesting success and process model development. The project will help to establish a bench mark for comparisons with other polynya areas, and will form a part of a broader seabirds population monitoring and ecology study of the eastern Arctic.

Monitoring of the industrial activities at McKinley Bay was continued to provide wildlife response data relating to pre-development activities in and around the Beaufort Sea.

Basic environmental data was collected for the Stokes Point-Phillips Bay area as part of the regional evaluation of the Beaufort Sea in relation to migratory birds. A study of previous exploration sites was also conducted, to assess the effects of those activities on birds and their habitats. Monitoring surveys of geese in relation to the Norman Walls development expansion were conducted cooperatively by Government and industry.

C.W.S. Western and Northern Region personnel were involved in the Beaufort Sea Development Review Panel through preparation of documents for, and provision of technical expertise to panel hearings. Staff continued to participate in several interagency committees.

A review of the key areas for migratory birds based on present knowledge, as well as the development of a draft concept management plan for Bylot Island Sanctuary, and of a draft public brochure on all Sanctuaries were carried out.

## Parks Canada

### *National Parks Activities*

## Economic Function: Culture and Recreation

### **Responsibilities**

The National Parks Branch is responsible for selecting and establishing new national parks in the various geographical and marine regions of northern Canada. The Prairie Regional Office (Winnipeg) manages the existing national parks.

### **Review 1983-84**

#### *New Park Studies*

Parks Canada has identified "Natural Areas of Canadian Significance" (NACS) in each of the 15 natural terrestrial regions located mainly in the Territories. National park reserves have been established in four of these regions and in three areas, lands have been withdrawn for future national parks. Parks proposals have been presented to the public in four additional regions.

#### *Northern Yukon*

A national park in the western portion of the northern Yukon was included as part of the COPE Agreement, recently approved by Cabinet. The CYI Agreement-in-Principle provides for the involvement of the Old Crow Band in a national park over the northern part of the Old Crow Flats. Discussions have taken place to delineate the park boundary and legislation to amend the National Parks Act is in preparation.

#### *Ellesmere Island*

Lands were withdrawn in June, 1982 for national park purposes for a period of two years. Park planning and establishment principles have been incorporated into a paper which formed the basis for public consultation. A final agreement between Canada and the Government of the Northwest Territories has been drafted and is under discussion.

#### *East Arm of Great Slave Lake*

A non-renewable resource assessment has been carried out and a boundary proposal prepared. Public consultations on this proposal will be initiated this year.

#### *North Baffin (Bylot Island/Eclipse Sound)*

A natural resource study and a non-renewable resource study have been completed. Results will be used in the preparation of boundary options.

### **Plans 1984-1985**

It is hoped that two new national parks, Northern Yukon and Ellesmere Island, will be created by the time of the celebration of Parks Canada's Centennial in 1985. Studies will be undertaken to identify park management guidelines.

Public consultations on the East Arm proposal will hopefully result in the establishment of that area as a national park in the near future.

Field assessments will be conducted during the summer of 1984 on north Banks Island, Wager Bay, and Southampton Island to identify boundary alternatives and to assess natural resources and non-renewable resource issues. Local communities have expressed interest in these projects. Parks Canada intends to meet with the communities to discuss these plans, opportunities for local involvement in new national parks, and the degree of support for these new park initiatives. A study of the marine environment of Eclipse Sound will be undertaken to improve the information base in support of the North Baffin proposal.

Field studies will be undertaken of the future Canadian landmark site of Nelson Head.

#### *Canadian Heritage Rivers System*

### **Review 1983-84**

The Government of the Northwest Territories (GNWT) and the Yukon Territorial Government (YTG) have joined the Canadian Heritage Rivers System announced in January, 1984. Parks Canada in cooperation with DIAND and GNWT has carried out a system study of northern rivers in order to identify rivers in the Territories for possible heritage designation.

### **Plans 1984-85**

Parks Canada plans to conduct, in cooperation with DIAND and the Territories, background studies of certain rivers for possible nominations to the Canadian Heritage Rivers System.

#### *Kluane National Parks Reserve*

### **Review 1983-84**

Implementation began on the public transit system aimed at providing access to the Kaskawulsh Glacier in the Slims Valley. The low-grade road alignment was surveyed and out, geo-technical and environmental studies were continued, and trails and exhibits were designed. A tender call was issued to seek private operators who might be interested in developing and operating the transit system and support facilities.

A Park Conservation Plan detailing future resource management activities was completed.

### **Plans 1984-85**

Work on the Kaskawulsh Access system will be continued. Environmental studies will be completed, low-grade road and trail construction will commence and exhibits will be fabricated. A suitable private operator and proposal will be sought to operate and develop the system.

#### *Nahanni National Parks Reserve*

### **Review 1983-84**

The first stage of Nahanni Management Plan program was completed with a series of public meetings in selected Northern and Southern Canadian communities. Plan Alternatives were formulated and reviewed with the public in March/April 1984 to complete the second stage in the program.

An interpretive exhibit to be housed in the G.N.W.T.'s Blackstone Territorial Park on the Liard Highway adjacent to Nahanni was completed.

The Resource Description and Analysis component of the park's Natural Resource Management Process was completed.

### **Plans 1984-85**

The final stage of the Nahanni Management Plan program will be completed with the preparation of the draft plan, a final round of public consultation and the preparation of a recommended plan for the Minister's signature.

### *Auyittuq National Park Reserve*

### **Review 1983-84**

The Park Data Plan component of the Natural Resources Management Process was completed.

### **Plans 1984-85**

A research program to inventory the park's natural and cultural resources will be initiated.

Negotiations will be completed with the G.N.W.T. with respect to planning and sharing the costs of a joint Visitor Centre to be constructed in Pangnirtung commencing in 1985-86.

### *Wood Buffalo National Park*

### **Review 1983-84**

A recommended Management Plan was completed following an intensive three-year study and extensive public consultation. The plan was forwarded to the Minister of the Environment for approval.

Plans were completed for a new federal building in Fort Smith to house, amongst other uses, the park headquarters and visitor reception function.

Wood Buffalo National Park was designated a World Heritage Site by UNESCO in recognition of its outstanding natural values and significance to the heritage of mankind.

### **Plans 1984-85**

The new park headquarters building in Fort Smith is expected to be opened in Fort Smith. A ceremony is planned in 1985 to officially proclaim Wood Buffalo as a World Heritage Site. Implementation of the park management plan will commence.

### *Historic Resource Theme Studies in the North*

Studies are now underway to assist Parks Canada in identifying and selecting possible new national historic parks in the north.

### **Plans 1984-85:**

(a) *Whaling in the Arctic*: the first phase of a research and planning study on Arctic Whaling has been reviewed and approved by the Historic Sites and Monuments Board. Cumberland Sound (Baffin Island) has been identified as a priority area for interpreting the whaling industry. During the summer of 1984 a site assessment group will be charged with evaluating candidate sites in Cumberland Sound as to their potential as national historic parks. This study will be completed in fiscal 1984-85 for review by the Historic Sites and Monuments Board.

(b) *Arctic Prehistory*: a similar thematic study has been initiated to identify important aspects of the prehistory of the Arctic.

### *Klondike National Historic Sites*

### **Review 1983-84**

A 10-year strategy for implementing the Klondike National Historic Sites plan was completed. Restoration work was undertaken on the Robert Service Cabin, stabilization of the BYN building (British Yukon Navigation Co.) was completed, restoration work on Winaut's Store continued and the restoration/rehabilitation of the St. Andrew's Manse was completed. The Manse will be used for staff housing.

A cleanup of the historic Government Reserve area was completed and a walking tour was initiated.

Parks Canada established a visitor information service in the reconstructed A.C. Co. Store (Alaska Commercial Co.), the Government of Yukon visitor reception centre in Dawson.

### **Plans 1984-85**

Stabilization and concurrent archaeology and preliminary design work will commence for the restoration of the Dawson Daily News building.

Stabilization will be undertaken on the Custom's House and on Ruby's Place.

Preliminary design work will start on the S.S. Keno restoration and on the rehabilitation of the N.C. Warehouse (Northern Commercial Co.) as a future stores building.

### *Whitehorse National Historic Sites*

### **Review 1983-84**

Continued discussions with officials of B.C.'s Heritage Resource Branch reduced the area required for historic park purposes in the Northwest corner of the Province to 53 square miles. The land would be used to establish the Chilkoot Trail portion of the conceptual International Gold Rush Trail Historic Park, which stretches from the Alaska coast at Skagway and along the Yukon River to Dawson.

### **Plans 1984-85**

An amended memorandum of agreement to acquire land and to establish a National Historic Park in the area of the Chilkoot Trail is expected to be signed during the summer of 1984. A management planning program for the park area will formally commence upon execution of the agreement.

# External Affairs Canada

## Economic Function: General Government Services

The Department of External Affairs' activities in the North involve the operations of foreign governments and their agencies. The Department advises on matters having foreign policy implications, maintains a coordinating and operational role in matters of international law and policy relating to the Arctic, identifies and exploits specific trade opportunities and negotiates agreements with other countries which may propose activities in the North. Within the Department, a number of bureaux handle different aspects of Arctic matters.

The Energy Transport and Science Bureau through its Energy and Environment Division, coordinates departmental interests concerning Arctic energy and environment and facilitates contact and cooperation between the Canadian government departments and agencies concerned with these matters and their foreign counterparts. The Bureau closely monitors issues which impact on energy development projects in the Arctic and coordinates activities related to the foreign policy implications and the international trade development aspects of these projects. The Bureau is also concerned with Canadian involvement in environmental issues affecting the north which have international implications.

The Legal Affairs Bureau is responsible for securing international recognition of Canadian sovereignty in the Arctic and for ensuring that all activities and programs in the Canadian Arctic either reinforce or, at least, are not inconsistent with Canadian sovereignty over the waters as well as the islands of the Arctic Archipelago. As part of this task, the Director of the Legal Operations Division chairs the Interdepartmental Panel on Arctic Waters. The Branch, in consultation with departments and agencies having

specific responsibility for surveillance of coastal waters and for enforcement activities, is concerned with passage of vessels through Canada's arctic waters and, specifically, with the actions undertaken by Canada to protect the arctic marine environment.

The Bureau of European Affairs, which is responsible for the coordination of relations with the Nordic countries and the USSR, handles many of the exchanges and activities between Canada and these countries on issues related to the North. The Bureau heads the Circumpolar Affairs Panel created in April 1979, to promote greater coordination within the Department of northern foreign policy questions. Canada and the USSR are engaged in negotiations relating to a bilateral program of exchanges on questions concerning the Arctic.

The Bureau of United States Affairs coordinates Canada-United States relations in the Arctic, including matters having to do with science, technology, communications, energy, environment, and transportation questions (including the Northern Gas Pipeline), particularly along the 1,000 km Alaska/Yukon border. The Bureau is concerned with a series of northern environmental questions such as transboundary pollution, migratory birds and wildlife, bilateral cooperation in creating and managing parks and historic sites, designating and managing wild rivers, and management of transboundary rivers. In transportation, it has been responsible for the coordination of foreign policy aspects of such subjects as the reconstruction of the Haines-Alaska Road (Shakwak Project), and the White Pass and Yukon Railway.

The Bureau of International Security Policy and Arms Control Affairs provides liaison between foreign governments and various Canadian government departments, principally the Department of National Defence, in matters relating to the protection of Canada's security and sovereignty in the Arctic. Most significant in this regard is the coordinating role the Bureau plays in the evolution of Canada-American cooperation in the Arctic for the common defence of North America, including the Distant Early Warning Line of the North American air defence system.

The office of the Chief of Protocol, acting jointly with the Department of Indian Affairs and Northern Development, organizes an annual tour of the arctic for approximately 20 heads of diplomatic missions accredited to Canada.

The Cultural and Public Information Bureau provides foreign audiences with a variety of material on the North through its diplomatic missions. This material is in the form of articles for publication in post periodicals and in the foreign press, information kits, ministerial press releases and publications. The Branch also assembles or has produced photographs, videotapes and policy documents on Northern Matters for use in post media and public relations programs abroad. This material is designed to inform foreign governments, journalists and the public as well as to keep Canadian personnel working abroad abreast of developments in Canada.

Through its Trade Fair Program, the Department assisted Arctic producers to exhibit products and artifacts at several European trade fairs. The Trade Missions Program sponsored several mining and mining exploration delegations.

The Cultural and Public Relations Bureau is also responsible for exhibitions of Canadian art travelling abroad. These include two collections of Eskimo prints from the department's permanent collection and "Inuit Retrospective", belonging to the National Museum of Man. Its Cultural Affairs Division-Arts Promotion, after concluding in 1983 an arrangement with the Department of Indian and Northern Affairs, is now circulating abroad the latter's collection of Inuit and Indian art work.

To assist people contemplating travel abroad, the Passport Bureau makes passport application forms together with detailed instructions available at post offices, regional offices of other federal departments and agencies and travel agencies. The application form lists the eighteen Passport Offices in Canada.

Departmental information services are provided to the two territories.

# Federal Environmental Assessment Review

## Economic Function: General Government Services<sup>1</sup>

### **Responsibilities**

A federal Environmental Assessment and Review Process (EARP) was established by Cabinet in 1973 to assess the environmental consequences of federal projects and to have these findings applied in plans, decisions, and actions.

EARP covers projects initiated or sponsored by Federal departments and agencies that need federal funds or involve federal property. All federal departments and agencies are subject to the process, except proprietary Crown corporations and certain regulatory agencies that are invited to participate.

EARP is administered by the Federal Environmental Assessment Review Office (FEARO). Its Executive Chairman reports to the Minister of the Environment.

Under the process, departments and agencies screen proposed projects for potential adverse effects. If the effects are not apparent, a more detailed examination known as an initial assessment is made. FEARO encourages organizations to seek public response in the early stage of planning any activities that may be environmentally sensitive. If either the screening or the assessment indicates potential significant effects, the project is referred to FEARO for a formal review. Each project is reviewed by an independent panel appointed by the Minister of the Environment.

A panel reviewing a project publishes guidelines for the environmental impact statement (EIS) to be prepared by the organization planning the project. As part of its review, the panel holds public meetings and subsequently submits a report to the Minister. The report describes the major potential impacts, draws conclusions and makes recommendations. Decisions on the panel's recommendations are made by the Minister of the Environment and the Minister of the initiating or sponsoring department.

### **Review 1983-84**

Release of the final guidelines for preparation of the environmental impact statement (EIS) on the proposed Slave River hydroelectric project was postponed in June by the federal environmental assessment panel conducting the review. The postponement was to allow co-ordination of federal review activities with those of Alberta, so there will be as little duplication of effort and inconvenience to the public as possible.

The panel was appointed to review the potential environmental and directly related socio-economic impacts of the proposal, because these could occur in Wood Buffalo National Park which straddles the border between Alberta and Northwest Territories.

The Beaufort Sea assessment panel held a series of public meetings between September 14 and December 16 as part of its review of the proposal for production and transportation of Beaufort Sea hydrocarbons.

Informal and non-technical meetings were held in 20 northern communities. More formal and detailed meetings were held in Resolute, Inuvik, Whitehorse, Yellowknife, Calgary and Ottawa. This review saw for the first time the funding of participants as a pilot project. An independent committee allocated funds to twenty-two community, six native, and two conservation groups. FEARO is conducting an evaluation of funding effectiveness in achieving ends such as improved research by the groups and capability to participate in panel meetings.

### **Plans 1984-85**

The Slave River panel is expected to release interim EIS guidelines in an information requirements document to be issued jointly with Alberta in April, 1984. The Beaufort panel will present its report to the Minister of the Environment early in the year.

<sup>1</sup> While FEARO's activities are classed as "General Government Services" expenses are not reported in ANEP. Funding is derived from administration program funds of the Department of the Environment.

# Fisheries and Oceans

## **Responsibilities**

The department is responsible for fisheries research and management throughout the Canadian north, drawing its authority from several acts, including the Fisheries Act. The department also implements oceanographic and hydrographic programs and coordinates ocean policies and programs of the federal government.

## **Fisheries Management**

### **Economic Function: Short Range Research**

Four DFO regions (Pacific (Yukon), Western (NWT), Quebec (eastern Arctic and northern Quebec), Newfoundland (Labrador Sea and Davis and Hudson Straits)) carry out fisheries management and research. Fishery Officers in the territories carry out enforcement and inspection programs, and to a limited extent management functions. Professional assistance for fisheries and fish habitat management is provided by regional headquarters in Vancouver, Winnipeg, Quebec and St. John's. Policy development input is provided by departmental headquarters in Ottawa. The Freshwater Institute in Winnipeg, the Arctic Biological Station at Ste-Anne-de-Bellevue, Quebec, and the Northwest Atlantic Fisheries Centre at St. John's, Newfoundland all carry out arctic research activities.

## **Resource Research Branch (Headquarters)**

### **Responsibilities**

The Branch provides a national focus for policy development and coordination with respect to resource assessment and related fisheries research activities in the Arctic and other areas of Canada. The Branch provides departmental representation on interdepartmental committees concerned with northern issues.

## **Review 1983-84**

Resource Research Branch staff participated in activities concerned with the Beaufort Sea Environmental Assessment Panel, the Department of Indian Affairs and Northern Development's Land Use Planning and Conservation Policy and the Arctic Pilot Project. The Branch maintains interest in the development of the Energy Research and Development funding, Transport Research and Development and the Economic Development Agreement with the N.W.T. Specific areas of involvement are as follows:

- Represented DFO in reference to the Convention on International Trade in Endangered Species (CITES) and chaired the Subcommittee on Fish and Marine Mammals of the Committee on the Status of Endangered Wildlife in Canada (COSEWIC).
- Attended DIAND workshop on development of conservation policy for the North.
- Compiled the annual cetacean report.
- Provided input to Parks Canada's Marine Parks draft policy.
- Participated with Ocean Science and Surveys in developing a revised submission for the Northern Oil and Gas Action Plan (NOGAP) and part in the development of departmental initiatives dealing with marine environmental issues.
- Attended meetings of the World Wildlife Fund (Canada) Whales Beneath the Ice Project. Critical habitat studies on beluga and bowhead whales, population studies on beluga, narwhal and bowhead whales and communication studies on narwhal were funded.

## **Plans 1984-85**

An active role is planned in the coordination of Arctic fisheries and habitat research programs throughout the Arctic and in providing scientific input to develop departmental perceptions, roles and strategies for conservation of Arctic resources. Input will be provided toward the development of Arctic marine parks and DIAND's land use planning and conservation policies. The Branch will maintain contact in all aspects of ongoing research or other interests in the North,

having a direct relation to the fisheries resource, such as the Arctic Pilot Project vessel traffic studies and the Beaufort Sea Environmental Impact Study.

## **Fish Habitat Management Branch (Headquarters)**

### **Economic Function: Economic Development - Other**

### **Responsibilities**

The Branch provides planning and program support and advice to departmental senior management in Ottawa and the regions on all northern fish habitat management related policies, programs and issues. The Branch participates in policy development with respect to fish habitat management and protection in the Arctic and provides headquarters representation on a number of interdepartmental committees concerned with northern development and environmental protection.

## **Review 1983-84**

Fish Habitat Management Branch staff participated in activities associated with the Beaufort Sea Environmental Assessment Panel, including the preparation of DFO's final position paper and coordination of its participation at the public hearings. Work continued on input to DIAND's Northern Land Use Planning initiative and the arrangements necessary for implementation of the Land Use Planning process. Staff were also involved in coordinating input to the Northern Conservation Task Force and continued to provide policy advice to DIAND on offshore developments through the Interdepartmental Environmental Review Committee (IERC).

The report and recommendations arising from the public review of proposed Yukon placer mining guidelines were reviewed and consultations were held with DIAND and DOE to determine an appropriate regulatory regime.

### **Plans 1984-85**

Work will continue on the Beaufort Sea Environmental Assessment with a review of the Panel's report and recommendations.

Panarctic's proposed Bent Horn Project and Consolidated Magnorth Oakwood's Lancaster Sound proposal will be reviewed. Work will continue on implementation of the Land Use Planning program. The Branch will assist with the development of regulations to control effluent quality and other aspects of placer mining, vis à vis the protection of fish and fish habitat. Staff will also participate in the development of the Plan for the Mackenzie River Basin and in the Northern Regulatory Review being conducted by DIAND.

### **Arctic and Native Affairs Branch (Headquarters)**

### **Economic Function: General Government Services<sup>1</sup>**

#### **Responsibilities**

The Branch formed in 1982 provides a departmental focal point for policy development, program coordination and advice on all native-related issues which impinge on the department's mandate. Branch personnel function as departmental representatives on government teams established to negotiate the settlement of native comprehensive land claims. In 1984 its area of responsibility was expanded and its title changed to include arctic operations within Pacific and Freshwater Fisheries, as Native issues through the settlement and implementation of claims will influence fisheries management policies and programs in northern Canada in the future. Thus advice and recommendations on arctic issues are now provided for senior management by the Branch.

#### **Review 1983-84**

Staff represented DFO interests on negotiating teams working on the finalization of the Agreement-in-Principle with the Council for Yukon Indians (CYI), and the completion of the Final Agreement with the Committee for Original Peoples' Entitlement (COPE). Input was made to the government's position on a Wildlife Agreement-in-Principle with the Inuit Tapirisat of Canada (ITC), and a

representative provided for the negotiating team for the Dene-Métis claim which got underway early in 1984. The branch was the departmental focus for input to the Constitutional Conference on native rights in March, 1983 and March, 1984.

#### **Plans 1984-85**

Work on land claims is expected to peak as the Dene/Métis comprehensive land claim negotiations gather momentum and those with the CYI, and ITC progress towards final agreements. Negotiations on the Labrador Inuit claim will likely begin in 1984 upon ratification of the COPE Final Agreement. The branch will continue to play a lead role in the ongoing process of native rights clarification that resulted from the Constitutional Conferences in 1983 and 1984.

### **Western Region Fisheries Management, Northern Territories**

#### *Field Services*

#### **Responsibilities**

Field Services in the Northwest Territories is responsible for enforcement of regulations, inventory of the harvest and local implementation of management programs. Fisheries officers enforce the **Fisheries Act** and attendant regulations. Area biologists are responsible for collection of data on resource exploitation at the local level.

#### **Review 1983-84**

Education and enforcement activities attempted to foster the conservation ethic and to reduce waste with respect to the hunting of whales. Similar efforts were directed in the area of fish and marine mammal habitat disruption. Staff continued to participate in inter-departmental resource use and allocation committees.

### **Plans 1984-85**

Field Services staff from Inuvik to Frobisher Bay will continue to implement existing programs of direct enforcement where required and preventative enforcement in all areas. Emphasis will again be placed on working with fishermen and marine mammal hunters to reduce waste of the resources caused by poor fishing and hunting practices and improper handling of the catch.

Maintenance of harvest levels of narwhal within existing quotas will also be a priority in problem areas. Hunters and trappers associations in most areas are becoming increasingly conscious of problems - which arose in the past - and are gradually assuming more direct responsibility in the allocation of narwhal tags in an effective manner. A concerted effort to improve and accelerate conservation education programs, as well as to improve the collection of accurate harvest data will be made.

The restricted entry policy for the Great Slave Lake commercial fishery will continue, as will discussions with fishermen to develop and improve the current management plan. Monitoring of the Great Slave Lake commercial fishery will continue. Plant sampling in each administrative area, will include collection of whitefish and determination of length, weight and age will be made three times per year. The Buffalo River inconnu fishery will be monitored, as will the domestic fishery for inconnu at Buffalo Lake.

The Arctic char fisheries of the Cambridge Bay area will be sampled by collected of specimens from the packing plant at Cambridge Bay. Walleye fisheries on Kakisa and Thathlina lakes will be monitored. Subistence fishery harvest data will be gathered where possible. It is anticipated that at least partial surveys will be conducted at Hay River, Fort Resolution and Dettah Village.

A creel census and biological sampling of the Kakisa River sport fishery is planned and stocked lakes (e.g. Polar, Upper Cabin and Sandy) will be monitored for angler success. The catch will be sampled to determine various biological parameters.

The walrus hunt near Igloodik will be monitored by staff from Frobisher Bay. Collection of at least 30 sets of samples and measurements will be taken. The catch from commercial fisheries in the Rankin Inlet area will be sampled. Test netting in the Sylvia Grinnell River will be done to ascertain the size and age characteristics of the Arctic char entering that river.

<sup>1</sup> Note that because of its nature this activity is shown under Economic Function "General Government Services". However funding is provided under the Economic Function "Short Range Research".

## Arctic Resource Assessment

### Economic Function: Short Range Research

#### **Responsibilities**

The Arctic Resource Assessment section is responsible for field surveys, stock and habitat assessment, and monitoring programs which enable the department to review effectively environmental impact statements. It also develops and implements management rationale for fish and marine mammal resources in NWT.

#### **Review 1983-84**

##### *Fish and Marine Mammal Management*

Assessment studies for lake trout stocks in the inland Keewatin Lakes and for Arctic char stocks on Victoria Islands were completed. A fish weir in the Rat river (Western arctic) was used to enumerate and tag the Arctic char upstream run. The lake whitefish stock identity and migration study in Great Slave Lake was continued. Monitoring of the effort and harvest of the sport fisheries took place in stocked lakes in the vicinity of Hay River and Yellowknife, Kakisa River, and the Inuvik area, for commercial fisheries on Great Slave Lake, walleye fisheries in Kakisa and Thathlina lakes and char fisheries in the Cambridge Bay and Rankin Inlet areas. An assessment of Pacific herring stocks in the Tuktoyaktuk area and an equipment trapnet study on Great Slave Lake continued. In addition, the Test Fishery Program on Baffin Island, in conjunction with the N.W.T. Wildlife Service, was extended. Pilot creel census studies, expanded to include economic evaluation of sport fisheries, were undertaken in several locations in the Northwest Territories.

The beluga hunt in the Mackenzie Delta was monitored with an expanded biological sampling program to assess the age, size and maturity of animals hunted. Other beluga studies included the aerial and land census of the animals in Cumberland Sound and Clearwater Fiord during August, and monitoring of the hunt here and in the Keewatin communities of Whale Cove and Eskimo Point. Biological sampling was part of the overall study.

Aerial surveys, to estimate stock size and summer distribution of narwhal, were conducted in the Lancaster Sound area (Eclipse Sound and Admiralty Inlet) and the Repulse Bay and N. Foxe Basin areas. In addition, the native hunt was monitored for catch/effort, and biological sampling continued. The third year of a five-year study of walrus in N. Foxe Basin concentrated on monitoring the hunt in the Igloodik and Hall Beach areas and biological sampling of the hunted animals.

DFO continued to participate in the Keewatin and Baffin Region harvest studies.

#### *Resource Impact Investigations*

The migrations of anadromous coregonids was monitored by means of radio tags and echo-location equipment. Emphasis was placed on the Mackenzie Delta and in the area of the Ramparts Rapids on the Mackenzie River. In the Tuktoyaktuk area, the program to describe the physical and chemical characteristics of Tuktoyaktuk Harbour and its importance as fish habitat was completed. A program to document the effects of river crossing construction on aquatic resources was initiated as part of DFO's Norman Wells Pipeline monitoring efforts. Under the Department of Indian and Northern Affairs' Arctic Land Use Mapping project, contract staff gathered, updated and compiled information on the fish and marine mammal resources of Wager Bay, Southampton Island and Melville Peninsula.

#### **Plans 1984-85**

##### *Resource Impact*

Work will continue to obtain information on the aquatic resources of the area and the effects of current and proposed industrial activity on these resources.

A study of fisheries resources located along the Yukon North Slope will be done. Surveys of the area between Phillips Bay and Roland Bay will be undertaken to determine the timing and extent of migrations along the coast. The utilization of coastal lagoons and freshwater habitats by anadromous and resident species will be investigated. This assessment will include an intensive biological survey of Stokes Lagoon.

Little is known about the population concentrations and habitat requirements of marine and anadromous fish in the Beaufort Sea. A multi-year program to identify areas of significance to marine and

estuarine fish on the Mackenzie Shelf from Demaraction Point to Cape Bathurst will begin.

Other studies include the determination of baseline concentrations of heavy metals in clams (*Mya*) and seaweed (*Fucus*) in relation to sediment concentration from locations near Igloodik and Cape Hatt. The sampling began in 1983 and data are currently being analyzed so that a report can be generated in 1984. Samples of marine biota and sediments in the vicinity of the Nanisivik and Polaris base metal mines will also be taken in 1984.

Under the Norman Wells Pipeline Monitoring Program, initiated in 1983, midwinter sampling will be conducted at three sites. Early summer and late fall sampling will provide a full year of preconstruction data from all sampling locations. In 1985, midwinter sampling will coincide with pipe laying operations. The Arctic Land Use Research program (Northern Land Use Information Study), which began in 1983, will concentrate studies on southern Baffin Island.

##### *Fish and Marine Mammal Management*

Programs to be undertaken in 1984-85 include continuing investigation of sports and commercial fisheries on Great Slave Lake, to determine the current values of the lake trout harvest and catch/effort at each of the sport fishing lodges; to determine the biological population structure of lake trout and lake whitefish within the lake; and, to obtain estimates of sustainable yields for trout and whitefish to determine commercial quotas and to develop a rational basis for allocation between the sport and/or commercial fisheries. The program will include creel census and sampling at each of the sport fishing lodges, sampling of the commercial catch at plant locations, as well as tagging and sampling whitefish and lake trout from other areas of the lake and the collection of harvest statistics from the domestic fishery.

The commercial char catch from various systems in the Cambridge Bay area will continue to be sampled in conjunction with Field Services Branch. The study will also include taking samples from the commercial catch at the processing plant in Cambridge Bay and the operation of an experimental weir on the Jayco River in Albert Edward Bay. In the Rankin Inlet area, a creel census of the char sport fishery on the Diana River will be undertaken as well as a survey of the domestic char fishery.

In the Mackenzie Delta, a fish weir will be operated on the Rat River to enumerate the upstream migration of char, to assess the potential for a small commercial fishery.

In the Beaufort Sea area, samples will be taken from the domestic beluga hunt and analyzed for biological parameters such as age structure of the catch and stomach content. In addition, a small scale aerial survey will be undertaken to test the applicability of using photographic techniques in the estuary.

Studies of narwhal in the Arctic Bay area will continue. Aerial surveys of three summer concentration areas will be made and samples will be taken from the domestic hunt. This work will be done in conjunction with World Wildlife Fund studies and those being undertaken by the Arctic Management Research Section. Aerial surveys of narwhal will also be done by the Field Services Section in the Repulse Bay and Frozen Strait area in July. Monitoring of the domestic hunt and field observation of distribution and behaviour of whales during mid-July through September will be done concurrently.

The Southeast Baffin beluga study will continue and will include monitoring of the domestic hunt and biological sampling of whales landed in the Clearwater Fiord area. An observation camp will be erected and staffed on the cliffs above Millut Bay (Clearwater Fiord) to monitor the movements, distribution and abundance of beluga in the area from mid-August until the end of September.

Assistance will be provided to the Field Services Section to continue monitoring the walrus hunt in the Igloodik-Foxe Basin area. Samples will be taken from the domestic catch and analyzed for various biological parameters, such as age structure, genetic homogeneity and heavy metal load.

## Arctic Management Research

### Responsibilities

This section conducts research on fish and marine mammal populations of the Canadian arctic and their habitat requirements, so that sound decisions on the management and protection of these populations can be made.

### Review 1983-84

Studies on population ecology and productivity of selected marine mammals started in the 1983 field season. Studies on stock identification and separation were continued and intensified as sample collections increased. Similar studies on arctic freshwater and anadromous fishes continued.

### Plans 1984-85

Studies falling under two broad programs: Arctic Marine Mammal and Fish Population Biology and Arctic Marine Ecosystem Dynamics will be done.

Investigations of the genetic characteristics of various arctic marine mammal and fish populations will continue in order to develop biochemical techniques for stock separation. In particular, samples will be obtained from the Great Slave Lake whitefish population, broad whitefish in the lower Mackenzie River - Beaufort Sea area and from several species of marine mammals from various locales.

A study of the productivity of various species of marine mammals will continue and will include a study of marine mammal ageing techniques. Odontocetes (beluga and narwhal) from the domestic catch in the Beaufort Sea, Western Hudson Bay, Cumberland Sound, and Jones Sound will be sampled to evaluate possible causal factors to relate biotic and abiotic factors to reproductive success. A similar study of pinniped reproductive performance will be conducted to determine possible biotic and abiotic contributing factors. Walrus will be sampled by Field Services personnel in the Igloodik area. Harp seals will be collected in the Lancaster Sound area. A bearded seal study area has yet to be selected.

A study of various aspects of marine mammal biochemistry, nutrition and metabolism will begin. Tissue samples from individual animals will be taken throughout the year to determine nutritional status with respect to seasonal, physiological and reproductive cycles.

A study to elucidate various aspects of behavioural ecology of ringed seals will be continued. Data will be used to develop a population model and to predict or evaluate the effects of vessel noise and ice-breaking in fast ice habitat. The studies will be undertaken in conjunction with personnel from the Arctic Biological Station.

Section personnel will act as scientific authorities for a University of Manitoba study funded by the World Wildlife Fund's Whales Under Ice program. This study will document and verify ecological and behaviour characteristics of narwhal and beluga in the Lancaster Sound area.

A study to determine abundance, distribution and disturbance state of marine mammals through the application of airborne and/or satellite remote sensing techniques, underwater vocalization detection and localization and active sonar methodology will be initiated in 1984. These investigations will be funded through the National Energy Program.

Arctic Marine Ecosystem Dynamics projects are being undertaken at a number of locations throughout the NWT both in freshwater and in marine situations. The long-term research project at Saqvaquac near Chesterfield Inlet is phasing down. Results of the previous five years of study will be published. Summary results will be published in Inuktitut.

Division personnel will initiate a multifaceted study in the Resolute area. The International Biological Program's camp at Char Lake has been refurbished and will be occupied in March 1984. Studies will include primary production under ice cover and in open water. The productivity of marine amphipods will be investigated. A study to describe and quantify key aspects of the productivity of arctic marine fishes will begin at Resolute.

The long-term study of ecological factors and energy flow influencing an Arctic char population on the Kent Peninsula will continue. A study to examine migration to feeding areas, migration patterns, food utilization and productivity of Arctic char will be initiated in the Wellington Bay, Victoria Island area. Fish will be tagged with acoustic tags, observed using sonar, and sampled in feeding areas.

The long-term experimental cropping of whitefish from lakes in the Chitty Lake area will continue, and will involve regular sampling and the start of a new exploitation regime.

## **Fish Habitat Research**

### **Responsibilities**

The section conducts research on the mechanisms and processes in ecological cycles and the structure and function of freshwater and estuarine aquatic habitats in the arctic.

### **Review 1983-84**

Expeditions to Saqvaquac continued research on the geochemistry and radiochemistry of the estuary. Detailed sampling of elements of the food chain improved estimates of uranium-series nuclide bioconcentration in this arctic estuary. A study of primary production and plankton biology in the large northern lakes (Great Slave, Great Bear, Athabasca, Reindeer, and Winnipeg) was begun in order to develop an index of fish productivity.

### **Plans 1984-85**

Research will continue in uranium series radionuclide studies in Saqvaquac lakes, streams, estuaries and food chains to improve the information base on the fate of radionuclides from mine and reactor wastes in arctic aquatic ecosystems.

## **Economics and Marketing Services**

### **Review 1983-84**

DFO and the government of the Northwest Territories established two task forces. The first, which also includes representatives from the Department of Indian and Northern Affairs, is reviewing resource management goals for the fishery on Great Bear Lake. The objective is to assess existing resource allocation mechanisms and make recommendations to provide for the future management of domestic, commercial and recreational fisheries.

The second task force, which includes representatives of the Freshwater Fish Marketing Corporation, is reviewing the commercial fishery on Great Slave Lake to identify options for rationalizing the harvesting, packing and lake transportation operations of the fishery.

A pilot program designed to provide DFO with an alternative cost-effective approach to collecting catch and effort information on the recreational fishery at remote access fishing lodges was implemented. Two methods involving angler and industry participation in data collection were tested at three sites in the Territories.

### **Plans 1984-85**

The study of licensing systems in the Great Slave Lake commercial fishery, in abeyance in 1983, will be continued. The long term objective of the study is to provide for quasi-property right in what now is a common property fishery.

The pilot recreational data collection program will be operated for a second season. Based on cost effectiveness and data accuracy, the desirability of applying the data collection methods to the balance of the lodge industry will be assessed.

## **Inspection, Fisheries Assistance and Development (Southern Operations)**

### **Responsibilities**

In the N.W.T. the Department monitors fish handling and processing facilities as well as commercial fishing, processing and distribution systems to ensure conformity with regulatory requirements. Field and laboratory inspections ensure that fishery products are acceptable for market. DFO provides assistance to fishermen through vessel upgrading subsidies and vessel insurance. Technological assistance is provided to industry through development of new equipment and products and through modified fishing and handling methods. The Small Craft Harbours program develops and maintains facilities for use by commercial fishermen.

### **Review 1983-84**

In addition to maintaining existing regulatory, assistance and Small Craft Harbours programs, the Department expanded the Quality Improvement Program to complete certification of all commercial fishing vessels and began surveys of landing sites to compile a data base of construction and operational compliances. A development project involving an automated winter fishing shed was again tested and demonstrated on Great Slave Lake. The Beaufort Sea Herring roe test fishery was set up to investigate the possibility of producing a marketable volume of salted roe product.

Selective summer fishing methods were tested. The Saputit weir fishery project was repeated on the Jayco River and a trap net fishery was carried out in selected sport fishing areas on Great Slave Lake.

### **Plans 1984-85**

Southern Operations will continue to monitor fish handling and processing facilities and attendant distribution systems to ensure conformance to regulatory requirements under the Fish Inspection Act and complete the certification of all commercial fishing vessels. The surveys of landing sites to compile a data base of construction and operational compliances will continue.

Technological assistance will be provided to industry through development of new equipment and products and through modified fishing and handling methods. Examples in the NWT are the Beaufort Sea Herring Roe Fishery Project and the trial trap net fishery for whitefish in the east arm of Great Slave Lake. These projects will be undertaken in cooperation with the Fish and Marine Mammal Management Division.

## **Quebec Region**

## **Economic Function: Short Range Research**

*Arctic Biological Station,  
Ste-Anne-de-Bellevue, Qué.*

### **Responsibilities**

To conduct research in Arctic Canada, especially Northern Québec, that will increase understanding of the ecological relationships, behaviour and population dynamics of marine and anadromous fishes and marine mammals, and enable the department to provide sound advice on possible yields of exploited and potentially exploitable species; also to conduct research that will increase understanding of the biological processes involved in marine and estuarine ecosystems and enable the department to provide advice on the potential effects of the development of oil, gas and mineral resources, and hydroelectric power.

## Review 1983-84

Further studies of the fast-ice habitat of ringed and bearded seals were carried out in Amundsen Gulf and Prince of Wales Strait in April and May. Radio telemetry and temperature sensors were used to document the activity of ringed seals in their under-snow lairs.

A fourth year of behavioural research on white whales was conducted at Cunningham Inlet, northern Somerset Island, from July until the end of August; emphasis was placed on further documenting filial and group associations. In June and July an attempt was made to isolate sounds from offshore groups by recording from the floe edge in Lancaster Sound. Aircraft and other logistic support for both projects were supplied by the Polar Continental Shelf Project.

Marine mammal work was begun in northern Quebec in early June. Several communities harvesting white whales were visited, and a number of Inuit hunters were trained to collect information and specimens of marine mammals. Two Inuit field assistants worked with field parties throughout the summer.

A field party was placed at the Nastapoka River to study the harvesting, behaviour and movements of white whales in eastern Hudson Bay.

A special effort was made to observe and sample in detail the hunting of white whales in the Hudson Strait communities of Kangisuijuak (Wakeham Bay) and Quaqtaq (Koartac) during the late summer and fall months.

Frobisher Bay, southeastern Baffin Island, was again the major field site for biological oceanographic studies. Additional work was carried out at Cape Hatt, northern Baffin Island and in southeastern Hudson Bay.

Microbiological studies included work on bacterial production in conjunction with comparable measurements on other levels of the system in Frobisher Bay, and on the effects of oil on bacteria in association with other oil-related studies at Cape Hatt. Studies on detrital fall-out were continued in Frobisher Bay, using specially designed traps.

Studies on photosynthesis in phytoplankton and seaweeds continued in Frobisher Bay. Both plant groups were found to be much lower in lipid content than was expected from available information on cold-water forms. Ice flora and plants from below the ice taken in the area of the Great Whale River plume in southeastern Hudson Bay were studied to show the effects of the seasonally varying river plume. Ice fauna and the under-ice zooplankton were treated as part of the same study. The development of the fresh-water plume under the sea ice of the bay was found to exert considerable influence on the kind and quantity of fauna present. Physiological investigations on macrozooplankton were continued in Frobisher Bay. A distinct seasonal trend in metabolic rates of Ctenophora (comb jellies) which are among the major zooplankton predators, was demonstrated. This appears to be related to food availability and not to seasonal temperature variations. Population levels seem to remain quite stable through the year.

## Plans 1984-85

Work on ringed seals to be carried out in Barrow Strait will seek to relate the effect of variability in quantity and quality of fast ice to changes in ringed seal populations. The microclimate and activity budgets of seals in their under-the-snow lairs will be studied in the period February to May. Seals will be caught and instrumented with radio tags to provide ground controls for aerial surveys to be conducted in June. A sample of seals will be collected and examined to provide data on age structure, reproductive status and body condition.

Photographic surveys and tape recordings will be made at Cunningham Inlet along the floe edge to document the behaviour of white whales entering Barrow Strait. Routine behavioural observations of white whale congregations will be conducted from mid-June to mid-August.

The white whale studies initiated in 1983 will continue in eastern Hudson Bay; behavioural observations and sampling of Inuit harvested whales will be undertaken at the Nastapoka River, and a mobile party will concentrate on collecting specimens from the Inuit hunting in Richmond Gulf. A further study of white whales will be carried out at Kangisuijuak (Wakeham Bay) and Quaqtaq (Koartac) in southern Hudson Strait.

Regular collections of ringed seals, bearded seals and walrus from several Hudson Strait communities will begin in conjunction with an Inuit harvest study, as part of a new management program.

In August 1984 a behaviour project on bearded seals inhabiting northern Amundsen Gulf will begin in conjunction with a marine ecology camp to be set up by the Renewable Resources Training program of the NWT government at Walker Bay, western Victoria Island. This study will provide much needed information on the summer vocal activities of the bearded seal and seek to define and quantify the local benthic resources on which they depend.

The arctic near-shore ecology study in Frobisher Bay will be continued as the principal effort of the biological oceanography program. Activities will include additional work on the ecology of the under-ice biota, on fallout of nutrient materials to the zoobenthos, on growth and photosynthetic production of phytoplankton and seaweeds, on the ecology, biochemistry and energetics of the mainly carnivorous zooplankton, and on the feeding of herbivorous and carnivorous zooplankton species. Additional marine ecology studies are planned for other areas for short-term consideration of such matters as the under-ice biota and the effects of oil on bacteria.

## Newfoundland Region

### Economic Function: Short Range Research

#### *Fisheries Research*

#### **Responsibilities**

Emphasis is given to the planning and implementation of research cruises to eastern arctic waters with particular interest in major commercial fish species (cod, shrimp, Greenland halibut, roundnose grenadier) off eastern Baffin Island and in Davis Strait on behalf of Canadian-based fisheries. Other species studied include harp and hooded seals. Additional attention has focused on the West Greenland salmon fishery. Research interests represent northward extensions of projects originating along the Newfoundland/Labrador coasts.

### **Review 1983-84**

Data collected on arctic cod (Davis Strait to Grand Banks) since 1959 were analysed. A primary publication on stock discrimination of arctic cod is in preparation.

Preliminary analyses have been completed of morphometric data on Greenland halibut (stock discrimination). Long-term efforts have been mounted to prepare an adequate analytical assessment of the "total" NW Atlantic stock.

An analysis has been completed of 1982 shrimp research survey data from eastern Hudson Strait and Ungava Bay. Fishable biomass in Hudson Strait was estimated at 3,000 t. A very low biomass of 450 t was estimated for Ungava Bay. Biological data indicated that a possible 2-year reproduction cycle for females might be balanced by the high fecundity observed.

Catch rates, distribution and catch composition of shrimp in Division OA were monitored through the observer program. Data from the 1982 shrimp fishery were presented to the Northwest Atlantic Fisheries Organization (NAFO) along with the updated 1981 data. Information was compared to that presented from other countries in an overall assessment of the resource.

In March, 1983, over 9,000 harp seal pups were tagged in two major whelping concentrations off northeastern Nfld. A sample of over 800 pups was double-tagged to investigate tag loss. Further studies undertaken included those on size-dependent pup mortality; age composition of the commercial data; harp seal diets; female condition and pup growth rates; seasonal and annual variation in age structure of harp seal catches; and tag return survey. An aerial survey of hooded seals was carried out in northeastern Newfoundland in March, 1983. Only partial non-synoptic photographic coverage of the whelping patch was achieved and no ground-truthing was accomplished due to field logistics problems. Reproductive parameters of female hooded seals (based on ovaries collected in 1979) have been analyzed. Further achievements in 1983 include: a collaborative review of hooded seal biology and population dynamics; estimations from morphometric data of weaning period and pup growth rates; estimates of pup population of hooded seals from sealing vessel data 1977-82; and tagging of 825 hooded seal pups in March, 1983.

Research continued on the effects of marine fisheries on all Canadian Atlantic salmon stocks, with investigations extending to salmon feeding areas in West Greenland. A total of 2,153 salmon were sampled at the fish plant in Holsteinborg and 1,888 at Godthaab in centimeter length groups, including detailed measurements of fork length, gutted weight and scales.

Canadian observers participated in 21 shrimp and 18 Greenland halibut commercial fishing trips (Canada, Faroes, USSR, Denmark) in 1983. A total of 572 fishing days observed resulted in more than 250,000 length measurements and other biological information.

### **Plans 1984-85**

Shrimp, harp seal, hooded seal, salmon and arctic cod research will be continued. Hooded seal research will be expanded to provide estimates of pup production in Davis Strait. In collaboration with Danish scientists, further efforts will be made to determine the vital parameters of hooded seals hunted at West Greenland.

### **Fisheries Management, Yukon Territory**

#### **Responsibilities**

DFO is responsible for supervising all river and lake systems in the Yukon and northern B.C., with the direction of commercial, domestic and sport fisheries the major management concern. Habitat protection revolves around mining and proposed hydro dams. A major responsibility is the management of all freshwater species, including domestic fishing by non-natives. In addition, the District is involved in joint U.S./Canada management activities for transboundary river systems, power line proposals, Indian food fishing, mining, road construction, logging, seismic operations, and Beaufort Sea developments.

### **Review 1983-84**

The second year of the two-year Yukon River Basin Study involved seven field programs throughout the territory, carried out with the assistance of 52 temporary staff. Salmon studies were primarily aimed at the enumeration and collection of biological data with respect to the individual species in both the Alsek and Yukon drainages. Other continuing programs investigated lake productivity, inventoried fish species and studied growth statistics and harvest levels in selected lakes.

In 1983, the Yukon River commercial salmon fishery netted record catches of 13,027 chinook and 25,990 chum salmon. These figures were substantially greater than the previous ten-year averages of 4,800 chinook and 5,800 chum salmon.

In an attempt to obtain estimates of salmon populations, escapements, distribution, migration behaviour and timing, a tagging program was undertaken in conjunction with the Yukon River Basin Study. Using fishwheels located near the Yukon-Alaskan border, 1,266 chinook and 3,176 chum salmon were tagged and released. Of these, 315 tagged chinook and 665 tagged chum were recaptured in the Dawson area fishery.

In the most extensive radio telemetry program ever conducted on chinook salmon, 130 radio tags were applied to study migrational timing, distribution and behaviour. Forty-six radio-tagged chinook were tracked into the upper Yukon drainage over a period of about two months and distances in excess of 1000 km. Two radio-tagged and five spaghetti-tagged chinook migrated to the Whitehorse fishway where a total of 905 chinook were counted through the fishway. Approximately 13,000 tourists visited the viewing chambers in the fishway in 1983.

An enumeration weir enabled quantification of the total return to the Klukshu River. Counts of 2,500 chinook, 20,500 sockeye, and 300 coho indicated below average to average returns for these species. Approximately 1,600 salmon were sampled for age, size and sex composition.

Several lake studies were conducted in conjunction with the Yukon River Basin Study, including fish species inventories on 18 lakes and creel census on three lakes.

Most lakes were found to have similar species composition. Lake trout and whitefish respectively comprised 36.2% and 41.4% of the overall composition by weight. A conservative management policy was recommended for lake trout in which annual harvest levels reflecting individual lake productivity and species composition would be established.

Although the stocking of pothole lakes was not conducted this year, results of last year's stocking appeared to be very favourable. Catches were especially good on most lakes, with some fish exceeding a weight of one kilogram by fall.

Placer mining continued as the leading fisheries habitat issue in the Yukon. The department contributed to the development of guidelines for the placer mining industry. The new guidelines classify streams according to species production. Stronger constraints are needed for those streams having salmon and trout and lesser for grayling.

#### **Plans 1984-85**

Minimal field activities are anticipated in 1984. Greater emphasis will be placed on the analysis of data collected in past programs and on report writing. It is hoped that the pothole lake stocking program will be continued in 1984-85. The final policy and regulations for commercial sport fishing lodges is expected to be finalized by mid-summer.

#### **Ocean Science Surveys**

#### **Economic Function: Long Range Research**

Ocean Science and Surveys (OSS) conducts northern activities from three regional establishments: Atlantic Region, at the Bedford Institute of Oceanography (BIO), Dartmouth, N.S.; Québec Region, at the Champlain Centre for Marine Science and Surveys, at the Gare Maritime, Québec City; and Pacific Region at the Institute of Ocean Sciences (IOS), Sidney, B.C. Two operational programs, hydrography (the Canadian Hydrographic Service) and oceanography, are carried out in the north.

Headquarters, in Ottawa coordinates the overall programs and performs the line functions of chart production and Marine Environmental Data Service. Northern work is done in collaboration with other government departments, universities in Canada and abroad, and with the private sector.

#### **OSS Headquarters**

##### **Review 1983-84**

OSS continued to provide the secretariat for the Canadian Committee on Oceanography (CCO) Panel on Ice, and represented the Department on the Environmental Studies Revolving Fund Steering Committee. The Ocean Science Affairs Branch participation in the work of a member of interdepartmental committees and groups; continued to develop program proposals for arctic oceanography and participated in the management of the Adams Island and Ice Deformation Project.

##### **Plans 1984-85**

OSS HQ will continue its participation in those committees and panels which demand its expertise. Work will continue on the Ocean Information Systems and the Ocean Climate Program and on the possible elaboration of joint Arctic endeavors with the Federal Republic of Germany, Japan, France, the U.S.A. and the U.S.S.R. OSAB will continue to supply the Scientific Authority for the Joint NRC/DFO/AES Adams Island Ice Deformation Study.

The Marine Environmental Data Services will continue to process and store chemical and physical oceanographic data and to provide data and information on request. The Wave Climate Study will continue to support drilling activities in the Beaufort Sea. A satellite wave measurement system will be deployed in support of the Gulf Tarsuit Island Removal Program.

The Scientific Information and Publications Branch will continue to publish validated scientific results of Departmental R&D Programs in the North.

#### **Pacific Region OSS (Institute of Ocean Sciences)**

##### **Review of 1983-84**

##### *Ocean Physics Division*

The Division worked towards describing and understanding those physical processes which accomplish the transport and diffusion of water properties within the upper 1000 m of the ocean in the Arctic and across the ocean-ice and ocean-atmosphere interfaces. The channels between the islands in the Canadian Arctic archipelago and portions of the continental shelf which border on the Arctic Ocean and the Beaufort Sea were studied. Some work was also carried out in the deeper waters of the Arctic Ocean overlying the Alpha Ridge.

Interpretation of the early winter hydrographic data from the Beaufort Sea in 1979 was completed with the publication of a journal article and a technical report. Principal findings were a haline circulation on the Mackenzie Shelf and Slope driven by wintertime freezing, a systematic modification of Atlantic water temperatures near the circulation in this area.

The second year of field data were collected providing water level, structure and current velocity information in and adjacent to the Northwest Passage.

A program of water height measurement along the Canadian Arctic continental shelf was continued in cooperation with the Tidal and Current Surveys of the Canadian Hydrographic Service. Water pressure gauges were replaced at Mould Bay, Isaacsen, Audhild Bay and Pond Inlet to supplement existing permanent gauge sites and so to provide a record of pressure changes from the Beaufort Sea to the north coast of Ellesmere Island and across the archipelago.

Analysis of data acquired north and east of Spitsbergen in the spring of 1981 was completed.

In the spring of 1983 OSS took advantage of the establishment of the CESAR camp over the Alpha Ridge in the Arctic Ocean and CTD surveys were run northward from the coast of Ellesmere and Axel Heiberg Islands out to the CESAR camp with an additional section joining them at the CESAR latitude running from the Makarov Basin to the Canada Basin.

The OERD Ice/Ocean Dynamics Program began in 1983. The goal of this program is to improve understanding of the dynamics of the momentum transfer between the ocean and pack ice in ice-covered waters, and of those aspects of the dynamical oceanography of the Beaufort Sea pertinent to the short-term prediction of sea-ice motion in this area.

A computer-based study of thermal diffusion in sea-ice covers was undertaken to investigate the observational requirements for the determination of vertical heat fluxes in sea-ice from ice temperature measurements.

Under contract work from Environment Canada, numerical models of the southern Beaufort Sea and Kugmallit Bay were used to predict the surge levels likely to occur at Tuktoyaktuk in the event of a "100-year" design storm. Conclusions drawn suggested that the sea would flood most of the township within a few hours of storm onset, considerable property damage would occur and lives could be lost unless an adequate surge warning service is installed.

### *Ocean Information*

Four additional Arctic catalogue titles were added to the oceanographic data set series. Emphasis continued on the appraisal of the quality of data sets. This has contributed to the establishment of data archiving priorities in conjunction with MEDS and has resulted in the highest quality Beaufort Sea physical and chemical marine data being archived in the GE-3 format.

Other reviews and analyses completed or near completion in 1983 included: A Comparison of Natural and Petroleum Resource Development Related Fluxes of Metals, Hydrocarbons and Nitrogen, Phosphorus and Silicon to the Beaufort Sea; and Weather, Ice and Sea Conditions Relative to Arctic Marine Transportation (jointly with AES).

A detailed technical review of both the Beaufort Sea EIS and its Supplement was completed and Ocean Information Division made substantial contributions to the EARP public hearings at Inuvik and to the DFO position paper. Reviews of several major initiatives – a CMO proposal to drill for oil in Lancaster Sound, proposed port development at King Point and Stokes Point, and the Beaufort Sea Environmental Monitoring Project (BEMP) – were completed on behalf of DIAND.

### *Plans 1984-85*

The Frozen Sea Research Group of OSS's Institute of Ocean Sciences, (IOS) will continue extensive oceanographic programs in the Northwest Passage. All programs described in May, 1983 were completed as planned except the studies identified for NOGAP funding. IOS personnel will take over the long-term monitoring of physical oceanographic information in Barrow Strait from the Bayfield Laboratory of Marine Science and Surveys. Studies will include monitoring of channel flow separation in the Barrow Strait-Wellington Channel area. A Conductivity-Temperature-Density (CTD) survey will be undertaken in Barrow Strait between 90°W long to 100°W long. Flow over the Barrow Sill will be monitored and boundary conditions monitored to develop a single layer barotropic model.

IOS will continue to monitor long-term flow through the Arctic Archipelago and conditions forcing that flow. Current meter and CT moorings will be placed off the northwest coasts of Prince Patrick and Banks islands for a period of one year. Frozen Sea Research Group and Canadian Hydrographic Service will conduct a joint program to study long-term nontidal water level fluctuations across the Arctic continental shelf. Water level gauges will be installed at Pond Inlet, Nansen Sound, Mould Bay and Isachsen. These data will be supplemented by data from permanent gauges at Tuktoyaktuk, Cape Perry, Coppermine, Cambridge Bay, Spence Bay and in Spitzbergen.

A current meter and CT mooring will be placed in the Herschel Canyon. Data will be supplemented with CTD profiles.

Should OERD funding under the National Energy Program be secured, a study of ice motion and formation in the Beaufort Sea will begin. The study will examine processes at the ice-ocean interface with the objective of improving ice movement forecasting models. Initial work for 1984 will consist of examining the sensitivity of existing models with indepth studies to be undertaken in 1985.

### **Atlantic Region OSS (Bedford Institute of Oceanography)**

#### *Review 1983-84*

##### *(a) Physical Oceanography*

The Marginal Ice Zone Experiment (MIZEX) is a multi-national program to study atmosphere-ice-ocean interaction in the marginal ice zone between the open ocean and the interior of the pack ice. Of particular interest to the Atlantic Oceanographic Laboratory (AOL) are the physical processes affecting the advance and retreat of the ice edge as they relate to sea ice problems along Labrador and Grand Banks. As part of the MIZEX program, an array of satellite tracked drifters were deployed in the marginal ice zone to measure strain rates and deformation within the pack ice and investigate sea ice response to atmospheric and oceanographic forcing. These data, combined with small scale deformation studies, will be used in developing dynamic-thermodynamic sea ice models for the marginal ice zone appropriate for regions such as the Labrador Sea.

The wind stresses on broken pack ice at the margin is believed to be at least twice as large as that on either the open ocean or on closed pack ice, for the same wind. A shipboard "dissipation" measurement and analysis system was developed and tested and will be deployed during the 1984 experiment.

Preliminary analysis and editing of sea ice data along the Labrador Coast for the period 1963-78 was completed under contract in May 1983. This AES data set includes total ice concentration, concentration of ice types (new ice, grey, grey white, first year and second year), ice edge presence and orientation, and percent of open water on a 30 x 30 n. mile grid.

It has been found that, for a given month, the year to year variability in sea ice extent is correlated with atmospheric temperature, reflecting the importance of thermodynamic processes in this region. Within a given season, the variability in sea ice extent at a given latitude is affected by surface wind stress and longshore advection. Results of these analyses will be used to review sea ice models of the Labrador Sea.

The large-scale circulation of the Labrador Sea and adjacent waters of Baffin Bay, are being studied by means of a diagnostic numerical model, in order to better understand the steady state and, in the future, the time dependent processes such as storms, deep convection, and the annual runoff cycle.

A project to study the circulation of the upper water column in Baffin Bay, funded by the Northern Oil and Gas Activities Program (NOGAP) began. Historical oceanographic data in Baffin Bay were assembled re-formatted into standard BIO CTD/CM format. AOL undertook a modest field program in the summer of 1983 using equipment purchased under NOGAP funding. Four satellite-tracked drifting buoys were launched in August and tracked throughout 1983. Three current meter moorings with eleven instruments were deployed in northern Baffin Bay in September with recovery scheduled for the late summer of 1984.

The third consecutive field survey in the longterm monitoring program of ocean properties and transport in Barrow Strait, initiated in March, 1981, by the Bayfield Laboratory (Burlington, Ontario) was successfully completed in the spring (March-April 1983) in cooperation with MEL.

The ice-cover thickness was one meter thicker than usually experienced in the area and resulted in a deeper and saltier surface layer. The salinity and temperature profile data plus the short term current meter arrays (4 week period) of 1983 will be compared to those of 1982 to study the variation of transport between the two years and the effect of the extreme cold weather of 1983 on the circulation.

Two prototype gyroscopically oriented profiling systems (G-UMPs) were successfully used to obtain simultaneous time series data on vertical structure in the temperature, salinity and flow fields. This on-going development is designed to provide necessary physical information for ecological studies.

Studies to test whether remotely sensed imagery can be used to supplement estimates of primary productivity in polar waters are continuing. Successful use of satellites in this area will eventually allow mapping of surface biomass in areas of interest, particularly those difficult to access by ship.

Satellite coverage of the high Arctic was made during July and August by CZCS sensor and data recorded at NASA Goddard, Washington. After preprocessing, the data will be shipped directly to BIO. During the Hudson '83 Arctic cruise, atmospheric and in water optical measurements, as well as water quality analysis, were undertaken. During the coming year, the data from the cruise will be processed and modelled. The satellite imagery will be examined on the inhouse image analysis system for its potential for comparative modelling.

#### *(b) Chemical Oceanography*

Studies of nutrient regeneration processes and the carbonate-alkalinity system in Baffin Bay have continued through 1983 in collaboration with scientists from the Chalmers University of Gothenburg, Sweden. The results of work in Baffin Bay have been used to construct a model for the stoichiometric composition of regenerating biogenic material which appears to differ in Baffin Bay from other areas of the ocean that have been studied.

This model should have application to the assessment of the consequences of increased carbon dioxide assimilation by the ocean resulting from the build-up of atmospheric carbon dioxide from fossil fuel combustion. During 1983, better quality carbonate measurements were obtained from Baffin Bay and these will be used to test and refine the model further. Similar work conducted in the vicinity of Svalbard and in the Arctic Ocean has been extended through the occupation of stations from the CESAR ice-camp.

Previous studies of artificial radionuclide distributions in the Norwegian Sea and Arctic Ocean were extended during 1983 with measurements carried out during the CESAR ice-camp expedition. These latter measurements were made not only to acquire information on the distribution of naturally-occurring nuclides in the Arctic Ocean but also, to re-examine the vertical distribution of fission-product nuclides.

Studies of the distribution of sea-ice meltwater have continued in the Arctic Ocean, Baffin Bay and the Hudson Strait/Labrador Shelf region. These investigations are being complemented by studies of the chemistry of sea-ice, particularly the nature of major ion fractionation that occurs as sea-ice is formed.

In collaboration with the Greenland Geological Survey, studies to determine the factors that govern the dispersal of metal-rich particles that are introduced in mine-wastes to a double fjordic system on the west coast of Greenland are continuing. Further analyses of particulate matter samples are being undertaken to provide more information on the impact of metal contamination of the area.

#### *(c) Marine Ecology*

Studies were done to determine the relative importance of microplankton in the respiration and cycling of nutrients in marine plankton communities and how they effect primary production in diverse ocean environments. A joint series of experiments designed in cooperation with Chemical Oceanography (AOL) were carried out during the 1983 Arctic cruise to investigate the biochemical composition of particulate and dissolved organic matter and its relationship to nutrient regeneration in Baffin Bay.

Studies of the physiological and biochemical mechanisms of adaptation of arctic phytoplankton have been underway for 6 years. Major emphasis has been placed on the importance of light, temperature and nutrients in regulating growth and on the capabilities and nature of the response of population to these environmental properties.

MEL scientists spent several weeks in March, April and May working with scientists from the Bayfield Laboratory on the shore-fast ice in Barrow Strait near Resolute Bay, N.W.T. studying the effects of water mass characteristics and the development of plant communities in spring on the physiology and distribution of pelagic zooplankton. A second program investigated zooplankton physiology and distribution during August and September after break up as part of the Hudson cruise. The studies at Resolute were carried out with the generous logistical support of the Polar Continental Shelf Program and the OSS Central Region Physical Oceanographic Program. The cooperation of Bayfield scientists also enabled us to extend this year's observations into June. Scientists from the National Museum have also cooperated in surveys of zooplankton distribution in the Barrow Strait region.

In 1983, a 24-hour series of samples was collected at spring tide in April. Triplicate nutrient samples and duplicate zooplankton samples indicate that observed variability is real but difficult to explain without more frequent sampling at several closely spaced stations over longer time periods. Echograms from a 200 KHz sounder show a "layer" at the depth of the pycnocline but sampling did not reveal any association with a concentration of zooplankton. Visits were made to the vicinity of the Dundas Island polynya and samples of ice algae and phytoplankton algae, for comparison with abundances in the Barrow Strait region, were obtained there.

The vertical zooplankton community structure was also examined at a single location at two to three week intervals from late March to early June. The distribution of developmental stages of the larger dominants, *Calanus hyperboreus*, *C. glacialis* and *M. longa* was fixed over the March-April period and their relative abundance remarkably constant.

#### (d) Hydrographic Programs

Systematic tidal and current surveys were carried out in Jones Sound, Baffin Bay. During March/April 1983, 5 tide gauges were deployed through the ice in Jones Sound using Resolute Bay as a base.

A major field program to determine the characteristics of the tides in Ungava Bay was carried out by assessing existing data, developing a numerical model of tidal propagation, and the deployment of shore-based and submersible tide gauges and current meters.

#### Plans 1984-85

##### (a) Physical Oceanography

A ship-based (CSS Baffin) program will be carried out in northern Baffin Bay during September 30 - October 11, 1984. The program will include the recovery of four current meter moorings laid during 1983/84, deployment of four current meter moorings, laying and recovering of tide gauge moorings, recovering of three current meter moorings in Ungava Bay.

Participation is planned in the international MIZEX program in the Greenland Sea ice edge.

##### (b) Chemical Oceanography

A ship-based program is planned to determine the plutonium distributions in the water column and sediments near Thule, Greenland.

##### (c) Marine Ecology Program

The program will be carried out at two over-the-ice camps near Resolute Bay. Investigations will be made on the biochemical composition of particulate organic matter and its relation to digestion in zooplankton.

### Central Region (Bayfield Laboratory of Marine Science and Surveys)

#### Review 1983-84

Following reorganization within Ocean Science and Surveys, personnel from the Bayfield Laboratory will no longer be conducting oceanographic programs in the Arctic. Programs and responsibilities will be transferred to the Institute of Ocean Sciences, Frozen Sea Research Group in Sidney, B.C., and to the Bedford Institute of Oceanography, Dartmouth, N.S. The Bayfield Laboratory will continue to be responsible for hydrographic surveys and will undertake some research and development projects.

#### Plans 1984-85

Ice radar work will include the development of ice-classification radar. Further experiments are planned for the summer of 1984 in collaboration with other government/industry agencies and universities on board Cominco's MV ARCTIC. Stepped-frequency downlooking radar experiments are also planned to determine ice-thickness from an airborne platform. This project will be undertaken jointly with University of Toronto and will depend on the success of ongoing laboratory studies.

### Quebec Region

#### Review 1983-84

In the winter of 1983 OSS Quebec Region personnel conducted a program to study physical and chemical features of the under-ice plume of the Great Whale River in southeastern Hudson Bay. Coincident biological studies of the ice flora and fauna and under-ice zooplankton in the area of the plume were undertaken by personnel from the Arctic Biological Station.

#### Plans 1984-85

In the winter of 1984 a program to examine the under ice circulation in James Bay will begin.

A program to examine basic oceanographic parameters in N.E. Hudson Bay and Hudson Strait will commence in 1984. Several long-term instrumentation moorings will be placed and data collected concerning primary and secondary production. This study will be part of a program being initiated by DFO to examine the potential development of commercial fisheries in the area.

## Canadian Hydrographic Service

### Economic Function: Transportation

#### Responsibilities

The Canadian Hydrographic Service (CHS) conducts hydrographic surveys in northern waters and produces, distributes and maintains up-to-date nautical charts, sailing directions and tide tables for northern regions.

#### Review 1983-84

##### Surveys

In the Spring of 1983, Central Region hydrographers participated in the CESAR (Canadian Expedition to study Alpha Ridge) project. The area of operation was the Arctic Ocean, northwest of Ellesmere Island, where a total of 1263 spot soundings and gravity observations were obtained. *C.S.S. Baffin*, from Atlantic Region, conducted route surveys in Jones Sound. The *M.V. Polar Circle*, from Pacific Region, completed a tanker corridor through the Beaufort Sea. In Parry Channel an over-ice survey was carried out in the northern part of Viscount Melville Sound. Surveys were also undertaken by Atlantic Region in Freeman's Cove and in Wellington Channel. On Baffin Island, reconnaissance sounding was done in Cambridge Fiord and 50% of both Itikbilung and MacBeth Fiords were surveyed. In Hudson Bay, staff from Central Region carried out surveys of Eskimo Harbour and approaches, while in Foxe Basin, Atlantic Region personnel made a side-scan sonar search in the vicinity of Hall Beach for the wreck of the *MV Edgar Jourdain*.

### Tides, Currents & Water Levels

A network of permanent water level gauges is maintained in the Arctic. These gauges are presently located at Alert, Frobisher Bay, Resolute Bay, Spence Bay, Cambridge Bay, Coppermine, Cape Parry, and Tuktoyaktuk. In addition, long term deployments of submersible water level gauges are presently supported at Mould Bay, Isachsen, Audhild Bay and Pond Inlet for mean sea level studies.

Additional tidal and tidal current studies were carried out using temporary instrument deployments (one to two months) in Dease Strait, Prince Regent Inlet, Jones Sound, Baffin Bay, and Foxe Basin. These studies were either part of a multi-year project to study the propagation of the tide in the arctic or in support of hydrographic field surveys.

Additional activities centred on the development of water level gauging and current measuring instruments for arctic applications.

#### Chart Production & Sailing Directions

Two new arctic charts, 56 new editions and 20 reprints were produced.

#### Plans 1984-85

##### Surveys

In the Beaufort Sea, multidisciplinary surveys will be done from Herschel Island to the 41st meridian under the Pacific Region's control. A through-ice operation will be undertaken in Prince Regent Inlet by Central Region personnel assigned to the Polar Continental Shelf Project. Central Region will survey the approaches to Imiujik, a new Inuit community on the east side of Hudson Bay, north of Great Whale River. In Foxe Basin Atlantic Region has tentatively scheduled surveys from Foxe Channel to Hall Beach and into Roche Bay. The survey of Jones Sound and of Parry Channel will continue. Tentatively planned are route surveys in the Archipelago and surveys in Pullen Strait and in the vicinity of Bylot Island and Broughton Island. Additional work is planned for Parry Channel. A route survey in Victoria Strait may be done.

### Tides, Currents and Water Levels

Permanent gauging stations and long-term deployment supporting mean sea level studies will be visited and the instruments serviced. Tide and/or tidal current studies will be carried out in the following areas: Gulf of Boothia, Jones Sound, Baffin Bay, Ungava Bay, Foxe Basin, Hudson Bay and James Bay. Equipment development projects begun last year will be continued. A newly-developed permanent water level gauging system will be installed at the Polaris mine site on Little Cornwallis Island.

#### Chart Production & Sailing Directions

Ten new arctic charts, 58 new editions and 15 reprints will be published. A new edition of Arctic Sailing Directions Vol. II will be released in 1985.

## **Medical Services Branch - Yukon Region**

### **Economic Function: Health**

#### *Role*

The Branch administers and delivers health care programs to all residents of the Yukon. The Branch's Yukon Region serves as the Territorial Health Department, and the Programs Medical Officer acts as Chief Medical Officer of Health.

The Branch's Yukon regional office facilitates community clinical visits by private physicians and dentists and makes arrangements for clinical services to outlying communities. Costs of health care are shared between Medical Services Branch and the Yukon Territorial Government. The latter administers the Health Care Insurance Plan and contributes to a cost sharing formula for capital and operating costs of the health care system.

#### *Facilities*

The Branch's regional office operates one general hospital, three cottage hospitals, two nursing stations, ten health centres, and four health stations.

#### **Review 1983-84**

Health care programs provided include Child and Maternal Health, Immunization, Tuberculosis Control, Communicable Diseases, School Health (includes School Dental Health), Environmental Health, Mental Health, Health Education, Public Service Health, Hospital Services, and the National Native Alcohol and Drug Abuse Program.

Maternal and Child Health continued as a priority this year. Prenatal classes held in all major centres of the Yukon were well attended. The provision of dental services continued with services to the remote communities being provided by dentists located in Dawson city, Faro, and Whitehorse. Dental therapists continued to provide services to preschool to grade eight children of the Yukon.

Membership on the Yukon Territory Water Board continued, in the person of the Programs Medical Officer who was involved in several ongoing investigations with other Federal departments. Investigations included the woodsmoke pollution in Riverdale (Whitehorse), and the arsenic content of raspberries in Carcross. A close relationship was established with the Yukon Territorial Government in Health Services and Program delivery.

The Branch's regional office continued to assist and encourage out-of-Territory medical specialists to visit and provide clinical services to the residents of the Yukon at Whitehorse General Hospital in the fields of:

- Paediatrics
- Orthopedics
- Dermatology
- Otorhinolaryngology
- Ophthalmology
- Rheumatology
- Oncology
- Internal Medicine
- Neurology

The Health Liaison Program with the Council for Yukon Indians continued to assist in upgrading the overall health status of the Indian people.

The Environmental Health Programs increased its role in health inspections of facilities throughout the Yukon Territory.

A comprehensive review of Nutrition Services was carried out by an interdisciplinary team from Branch Headquarters in consultation with regional staff. This study (September 1983) resulted in Nutrition Services being updated, strengthened, and developed to extend to areas outside of Whitehorse. More emphasis was placed on health promotion.

The Mental Health Program continued to promote community awareness and was strengthened by the addition of another psychologist and a native mental health worker.

Communicable Disease Control continued to promote public awareness of sexually transmitted diseases. A decline of confirmed cases of gonorrhea during the 83/84 period reflected this initiative.

The 1983/84 period was considered a "developmental" year for the National Native Alcohol and Drug Abuse Program. Emphasis was placed on the need for training for Board members, N.N.A.D.A.P. consultants and community workers. Twenty-three contribution agreements were active by November of 1983. Eleven Bands have N.N.A.D.A.P. projects at present.

The Whitehorse General Hospital was involved in a community disaster exercise. All areas of the hospital benefited from the experience. Equipment acquired during this period included a "birthing bed". Consultants were commissioned to carry out a study of the Whitehorse General Hospital's adequacy as a treatment centre.

#### *Maintenance and Construction*

A new Health Centre at Carmacks opened in February 1984. In Watson Lake and Mayo, homes were purchased to provide nurses' residences. A Beaver Creek house was purchased and renovated to provide a Health Station and overnight accommodation. Renovations for the Laboratory Department at the Whitehorse General Hospital were completed.

## **Medical Services Branch - Northwest Territories**

#### *Role*

The Northwest Territories Medical Services Branch provides acute treatment care and preventive health services to residents of the Northwest Territories, with the exception of those in Yellowknife, Hay River and Fort Smith where acute treatment care is provided by the Territorial Department of Health. That department is also responsible for the Territorial Hospital Insurance Services Plan, the Territorial Health Care Plan and supplementary health programs. The N.W.T. Government, under a contractual agreement, provides Medical Services Branch with support services in Finance and Administration.

Facilities in the Northwest Territories operated by Medical Services Branch include three hospitals: the Inuvik General Hospital with 55 beds, and two cottage hospitals; one in Fort Simpson and one in Rae-Edzo. In addition, there are 39 Nursing Stations, eight Health Centres and a number of Health Stations. The Nursing Stations provide treatment and public health services by nurse practitioners who, apart from their basic RN qualifications are trained in public health and mid-wifery and have gained expertise in diagnosis and treatment. The Nursing Stations are visited on a regular basis by physicians from the base hospitals and specialist services are provided by a number of universities including McGill, Manitoba, Alberta and the Clarke Institute of Psychiatry in Toronto. As well, a contract with the Government of the N.W.T. provides physician services.

All organized communities in the Northwest Territories are provided with Dental Services through fee-for-service private practitioners, Government Dental Staff and Dental Therapists. The latter reside in the community and service several satellite communities on a regular basis.

A team of nine Environmental Health & Surveillance Officers based in Frobisher Bay, Inuvik, Hay River, Yellowknife and Churchill, Manitoba perform the environmental health and surveillance function. These officers fulfill a three-part function in that municipal, territorial/provincial and federal levels of expertise are required. Working in close co-operation with other federal and territorial units such as the environmental protection agencies of various levels of government they identify problem areas and take corrective action.

## Review 1983

The major management objective of the Yellowknife Region was achieved in that all senior positions in the Regional Headquarters and the four Zone Directors are now staffed with permanent appointees.

The Region is developing a more comprehensive and integrated relationship with the Government of the Northwest Territories through the Health Co-ordinating Committee. Meetings are held on a monthly basis with daily liaison on matters of mutual concern.

During the year a Mental Health Program was set up in Inuvik to address a significant increase in mental illness. The program includes co-ordinators to train community residents to recognize early symptoms and a team of specialists on contact to provide supporting expertise. The applicability of this program delivery method is being studied for other Zones.

The Community Health Representative Training Program is now established in Frobisher Bay for the Eastern Arctic. Participants were selected from their home communities on the basis of recommendations from settlement leaders. The first students are expected to graduate in September 1984. Employment upon graduation will be through contribution agreement with settlement councils. This program is the first component of a multi-year plan to train new CHR's and to upgrade the qualifications of existing CHR's. Resources both within and outside the Region have been utilized to establish the program, develop the curriculum and ensure that course material is up to date.

In response to needs identified by the Dene Nation and Kitilameot Inuit Association, a Health Liaison Officer contract has been let to provide an additional communications link between the client and Medical Services Branch in the Western Arctic. This action is in response to the clients' wish to be involved in the health-care delivery system.

A well attended "Hearing Workshop" was held in the Baffin Zone in response to the identification of client group hearing problems.

An audiology unit has been formed in Frobisher Bay to provide treatment for those suffering from hearing ailments and to support educational thrusts to reduce their incidence.

## Social Services Programs Branch

### Economic Function: Welfare

#### Canada Assistance Plan (CAP)

The Canada Assistance Plan, enacted in 1966, contributes 50 per cent of costs of provincial, territorial and municipal public assistance and welfare services expenditures. The Plan provides assistance to persons in need and encourages the development and extension of welfare services to prevent and remove poverty, child neglect and dependence on public assistance. In addition to sharing the cost of welfare services, the Canada Assistance Plan provides consultant services to the provinces and territories on income support, day care, child welfare, institutional care and community development.

The federal contribution through CAP for the fiscal year 1982/83 was \$10.1 million for the N.W.T. and \$2.6 million for the Yukon Territory.

#### Vocational Rehabilitation of Disabled Persons Act (VRDP)

VRDP is a shared-cost program. The federal government shares 50 per cent of costs incurred by provinces and territories in providing a comprehensive program for the vocational rehabilitation of physical and mentally disabled persons.

The contribution for the fiscal year 1982-83 was \$442,000 for the N.W.T. and \$1.74 million for the Yukon Territory.

## Income Security Programs Branch

### Family Allowances

Health and Welfare Canada pays monthly Family Allowances on behalf of children under 18 who are maintained by a parent or guardian who lives in Canada and is subject to Canadian Income Tax. In March 1984, the Department paid allowances on behalf of 6 976 children in the Yukon and 20 058 children in the Northwest Territories.

For the 1984 calendar year, the rate payable in the Yukon and Northwest Territories is the federal rate of \$29.95 per month.

A program known as the Child Tax Credit started in January 1979. It is administered through the Income Tax system and provided an annual benefit of up to \$343, on behalf of each eligible child for the 1983 taxation year.

#### *Old Age Security*

The Old Age Security Act authorizes a non-contributory program that provides a monthly benefit to all people 65 years of age and over who can satisfy certain basic residence requirements and who are Canadian citizens or legal residents of Canada.

The Act also provides a Guaranteed Income Supplement to pensioners living in Canada who have a limited income. Again, where income is limited, the Spouse's Allowance is another benefit payable to the spouse of an Old Age Security pensioner. In March 1984, the basic monthly Pension was \$263.78.

The maximum monthly supplement was \$265.60 for a single or married pensioner whose spouse was not receiving either the Pension or a Spouse's Allowance, and \$204.86 each for a married couple.

In March 1984, 759 persons were receiving the Old Age Security Pension in Yukon. Just over half of the recipients (381) received a supplement. In the Northwest Territories, 1 337 people were receiving Old Age Security Pensions, and of these, 1 084 were receiving a supplement. There were 19 recipients of Spouse's Allowance in Yukon and 75 in the Northwest Territories.

The Family Allowances and Old Age Security programs are administered in Yukon and the Northwest Territories from the Regional Income Security Programs Office in Edmonton, Alberta.

#### *Canada Pension Plan*

The Canada Pension Plan, in existence since January 1, 1966, is a compulsory, contributory, earnings-related plan. Together with the Quebec Pension Plan, it covers virtually all employed persons between the ages of 18 and 70 in Canada. The maximum retirement pension in 1984 is \$387.50 per month.

#### *Beneficiaries by the type of benefit and by Territory*

March 1984

Territory	Retire- ment Pensions	Disability Pensions	Children's Benefits	Death Benefits	Surviving Spouse's Pension	Orphan's Benefits
Yukon N.W.T.	414 297	46 26	16 42	3 5	216 218	176 364

# Indian and Northern Affairs Canada

## Northern Affairs Program

### Responsibilities

Northern Affairs program activities include the management of northern resource development, the protection of the environment, the preservation of native languages and cultures, and the political evolution of the northern territories.

### Northern Policy and Coordination Branch

## Economic Function: General Government Services

Northern Policy and Coordination provides the focus within the department for interdepartmental efforts to coordinate federal and territorial policies and programs affecting the North. In addition, it has particular responsibilities for policy development and evaluation, northern research, and special social, cultural and economic development programs for the Inuit.

### Northern Policy Directorate

### Responsibilities

The Northern Policy Directorate provides a strategic framework within which policies for the north are developed to ensure that they are integrated into and consistent with the government's overall objectives for the north.

The directorate comprises three divisions which, with their respective responsibilities, are indicated below.

### Northern Policy Division

The Northern Policy Division ensures that policy initiatives of the Northern Program, the Department and other federal departments, consistently reflect the federal government's objectives for the North. The Division performs this task by participating in major Program policy development initiatives including those relating to Northern political and constitutional development, northern economic development, environmental management and program policy management and coordination. It also coordinates the Northern Program's involvement in the Departmental strategic planning process and Native Claims and

provides a Program focus for the review and analysis of other departmental and governmental policy initiatives which affect the North.

Highlights for 1983/84 included the provision of policy advice and support for the Program's assessment of major resource development projects, land use planning, and regulatory review. The Division contributed as well to ongoing discussions concerning northern political development and comprehensive native claims negotiations.

The Division produced the annual publications "Government Activities in the North" and "Annual Northern Expenditure Plan", and published the second edition (1983) of "Guide for Expeditions to the Canadian Arctic Islands". All three publications are available in both official languages.

### Native Claims Division

Formed early in 1982, the Division coordinates program inputs to the native land claims negotiation process and provides advice to management on the policy, program and operational implications of concessions made to native groups.

### Parliamentary and External Relations Division

This Division coordinates the Northern Affairs Program's support of the Minister's Parliamentary responsibilities by providing background information to assist him in answering to Parliament. It also prepares issue-related briefings for use during visits to the North by Cabinet Ministers.

The Division also plans, organizes and conducts tours of the North for Cabinet Ministers, Senators, foreign dignitaries, senior government officials, and members of the media.

### Territorial Relations Division

## Economic Function: General Government Services

A plebiscite was held in 1982 on the question of division of the Northwest Territories. Division was supported by a majority of voters. As a result, a Constitutional Alliance was formed, endorsed by the Legislative Assembly and made up of representatives from all N.W.T. native groups and the Legislative Assembly. The Alliance is divided into two forums, the Nunavut and the Western Constitutional Forums, with the federal government providing funds for their operations. Each meets separately, but come together as an Alliance to negotiate the location of a divisional boundary. Since the federal government accepted in principle the division of the Territories in November 1982, the two forums have been holding public meetings and discussions in both the Eastern and Western Arctic to arrive at a consensus on the crucial issues of boundaries, future locations of any new administrative centres, and the distribution of powers among local, regional and territorial levels of government.

An N.W.T. election was held in November 1983 to elect twenty-four legislators. The new Executive Council is composed of the Commissioner and eight elected members. The role of the Deputy Commissioner has been changed to that of a part-time, stipendiary position, with no portfolio responsibilities. The incumbent of the position no longer sits as a member of the Executive Council. Chairmanship of the Financial Management Board was assigned to the territorial Minister of Finance.

The federal government, in November 1982, renewed its longstanding commitment to more responsible government in the Yukon. Accordingly, the Yukon Act will be amended as soon as native claims have been settled to confirm in law the steps already taken toward achieving responsible government in the Territory. Related in-house work has been carried out.

A forum-based approach to providing federal financial support to the Territories will be introduced as soon as possible to allow improved fiscal planning and to enable northern governments to assume full accountability for their budget decisions.

To further strengthen Territorial governments and help them deal with related costs of resource development, the federal government has committed itself to giving the Territories a certain level of discretionary revenue. Specific proposals are being developed.

#### **Review 1983-84**

The Division continued to monitor the progress of constitutional development in the two Territories and to provide funding for that purpose. Federal-territorial financial agreements were coordinated.

#### **Plans 1984-85**

Federal-Territorial Financial Agreements covering fiscal year 1984-85 are as follows:

#### **Financial Agreements 1984-85 (\$000)**

##### **Yukon Territory:**

Operating Grant	83,402
Capital Grant	28,123
Loans	Nil

##### **Northwest Territories:**

Operating Grant	300,625
Capital Grant	83,479
Loans	Nil

#### **Additional Financial Assistance (Outside Agreements)**

##### **Yukon Territory:**

Hospital care of Indians & Inuit	1,313
Medical care of Indians & Inuit	376
Low income rental purchase housing	208

##### **Northwest Territories:**

Hospital care of Indians & Inuit	14,028
Medical care of Indians & Inuit	2,135
Low income rental purchase housing	Nil

#### **Norman Wells Project Coordination Office**

#### **Economic Function: General Government Services**

##### **Responsibilities**

The Office is responsible for co-ordinating all programs and activities associated with the construction and operation of the Norman Wells Oilfield Expansion and Pipeline Project in the N.W.T. and manages all departmental programs relating to the Norman Wells Project.

##### **Review 1983-84**

This year is the second of a five-year federal funding program that received approval in principle when Cabinet approved the Norman Wells Project on July 30, 1981. The Office co-ordinated activities for the Project and liaised with other federal departments and agencies, the Government of the Northwest Territories (GNWT), the Dene Nation and Métis Association of the Northwest Territories (MANWT) as well as the sponsors of the Project - Interprovincial Pipeline (NW) and Esso Resources Canada Ltd.

In addition to the regional offices in Yellowknife and Fort Simpson, a regional office was set up at Norman Wells.

Esso Resources' construction program was 65% completed by March 31, 1987. Construction of the mainline pipeline began in the N.W.T. in January and ended in April 1984 with 587 kilometers of line laid.

The Community Advisory Committee, with members selected by communities and appointed by the Minister of DIAND, was established and held regular meetings.

##### **Plans 1984-85**

Construction on the mainline pipeline will be completed by March 1985. During the summer of 1984 the main river crossings will be constructed and the pump stations built.

The Dene Nation and the Métis Association will implement their community-based impact monitoring programs. These programs will complement DIAND's socio-economic monitoring study (by the University of Saskatchewan under contract) now in its fourth year.

#### *Public Review Division*

#### **Economic Function: General Government Services**

##### **Responsibilities**

The Division is the focal point for the Northern Affairs Program's involvement in public assessment and review of major development proposals north of 60°. The Division coordinates assessment and review activities within the Department and between the Department and other federal departments and agencies, the Territorial Governments and northern and native groups. It provides intervenor funding to enable these groups to participate in the public review process. The Division maintains a documentation centre holding a variety of information of interest to the public, relating to major northern development proposals.

##### **Review 1983-84**

The Division maintained liaison with the Beaufort Sea Environmental Assessment and Review Process (EARP) Panel on behalf of the Department. An update to the 1982 detailed statement of the Department's northern mandate and responsibilities was provided to the Panel.

The Division coordinated the departmental review of the Environmental Impact Statement deficiency responses which were prepared by proponents of the Beaufort Sea development proposal. Technical, environmental and socio-economic information was reviewed by teams composed of departmental staff from various sectors of the Northern Affairs Program (NAP), Canada Oil and Gas Lands Administration (COGLA), Office of Native Claims (ONC) and Indian and Inuit Affairs Program (IIAP).

The EARP Panel held both community and general hearings during the period. Community hearings, which focussed on local concerns and perceptions, commenced on September 14, 1983 and were held in Beaufort Sea-Mackenzie Delta, Northwest Passage and Eastern Arctic region communities as well as Nain, Labrador. General hearings, which focussed on technical, environmental and government management matters, were held in Inuvik, Whitehorse, Calgary, Yellowknife and Ottawa. A division staff member accompanied the Panel as senior departmental observer and filed daily summaries on the hearings. The summaries highlighted matters raised at both the community and general hearings and were widely circulated to other government departments and agencies and the territorial government.

The Division provided secretariat services to a departmental Steering Committee and coordinated Departmental activities at the hearings.

The Division continued to provide intervenor funding to enable northern communities, northern organizations and the Beaufort Sea Alliance (a coalition of southern and northern environmental interest groups) to prepare and participate in the Beaufort Sea EARP hearings. Over the course of the Beaufort Sea EARP the Division provided intervenor funding to nineteen northern communities and seven northern native organizations. In excess of \$1 million intervenor funding was disbursed over a three year period (1981-82 to 1983-84) for the Beaufort Sea EARP, through an independent funding committee with administrative processes being carried out by the Division and the Federal Environmental Assessment Review Office (FEARO).

The Beaufort Sea EARP hearings concluded on December 16, 1983. The Division identified key northern issues raised at the hearings and maintained liaison with the Beaufort Sea EARP Panel secretariat during the remainder of the review period.

The Division coordinated a departmental review of proposed changes to EARP, conducted interdepartmental consultations on intervenor funding programs and policy, and contributed to the finalization of the terms of reference for the EARP Panel on the proposed Slave River hydro-electric development.

The National Energy Board (NEB) hearings into the Arctic Pilot Project remained inactive, having been postponed by the NEB in 1982-83. The Alaska Highway Gas Pipeline also remained relatively dormant during the review period.

A wide range of materials on the Beaufort Sea and other northern development proposals and public hearings (transcripts, applications, research reports and other documents) are readily available in the Division's documentation centre to a wide range of research interests both within and outside government.

The Division examined factors related to a compensation policy for hunters/trappers affected by northern development activities and carried out extensive interdepartmental and intergovernmental consultation on compensation issues.

#### **Plans 1984-85**

Polar Gas has announced it will file an application for a 0.9 metre diameter pipeline to link gas reserves in the Mackenzie Delta with pipeline systems in Alberta. The Division will examine public review/public consultation needs and processes in consultation with other sectors of the Northern and Indian and Inuit Programs.

The Division will coordinate a departmental response to the Beaufort Sea EARP Panel report, expected to be publicly released in July 1984.

The evaluation of the intervenor funding process used for the Beaufort Sea EARP will be completed during the period and should provide indicators for future funding programs.

A compensation policy for wildlife harvesters adversely affected by major northern development projects will be drafted.

#### **Office of the Northern Research and Science Advisor**

#### **Economic Function: Short-range Research**

This office advises NAP and other government departments, industry and universities on northern scientific matters; encourages a co-ordinated and effective approach within the Northern Program to funding and implements NAP scientific activities in the North; promotes northern science development; and manages research, scientific and technological activities between Canada and other circumpolar countries.

#### **Review 1983-84**

Various activities were carried out under the four main areas of northern science, social research, circumpolar/international affairs and science coordination and information.

The Northern Scientific Training Grants Program allocated \$725,000 to 26 universities to assist in providing advanced students with professional experience in the North. The program achieves its objectives by encouraging the formation of multidisciplinary focal points for northern studies within Canadian universities; and providing supplementary financial assistance to universities to help offset the cost to students of specialized studies in the North. With the refinements to Program policy and guidelines firmly in place, activities focussed on the following issues: expansion of the NSTP Committee membership, NST Program publicity initiatives; and preparation of the first Annual Report 1982-83.

The Branch provided policy direction to the two major Scientific Resource Centres located at Inuvik and Igloolik. Moreover, within the planning framework for the establishment of similar laboratories in other parts of the North as the need arises, a feasibility study of the construction of such a facility in Whitehorse was undertaken. Regarding improvements to the infrastructure of these facilities, emphasis has been placed in recent years on upgrading the Igloolik Resource Centre and its satellite field station at Sarcpa Lake. In addition to ongoing site cleanup at Sarcpa Lake, a permanent radio base station and tower were installed. Materials for mechanical, electrical and plumbing improvements to the existing infrastructure were provided.

In order to effectively monitor the impact of the Norman Wells Project upon the local economy and society, DIAND commissioned Dr. R.M. Bone, University of Saskatchewan, to undertake a monitoring study consisting of (1) a program to record the key demographic and socio-economic characteristics of the populations of each community and to enumerate the number and type of employers and their employees; and (2) to analyze this information and prepare a series of working papers from the data.

The Circumpolar Affairs Section continued to monitor socio-economic, technical and other related issues in the foreign north. Coordination activities included the Canada-USSR Arctic Sciences Exchange Program and the planning process for implementation of the Canada-Denmark Marine Environmental Cooperation Agreement (MECA). Research activities included study of the following issues: the Greenland Home Rule experience; implementation of the Alaska Native Claims Settlement Act with special reference to the Alaska Native corporations; United States Arctic Science policy development; Alaska offshore development; Soviet environmental laws and regulations; demographic, economic and social change among Native minorities in the Soviet North; and resource development as it affects the Maori of New Zealand.

A northern science coordination section was established. Initial steps were taken to establish an inventory and review of northern research supported by the Federal Government and the development of a network to coordinate scientific activities within the Northern Program, federal departments and agencies, territorial governments, private industry, universities and international organizations.

## *Social and Cultural Development Division*

### **Economic Function: Social and Cultural Development**

#### ***Responsibilities***

The Social and Cultural Development Division administers programs that support the social and cultural development of Inuit and other northern native people. The Division has three sections as indicated below.

#### ***Administration and Native Liaison Section***

This Section provides a link between the federal government and the northern native people. It arranges funding for consultation with native groups on northern development concerns and interests and arranges on the job training, counselling and other support services for Inuit in the National Capital Area.

#### ***Inuit Art Section***

This section serves as a central agency dealing with all aspects of Inuit art and provides professional assistance to art-producing co-operatives. The Section works with Canadian Arctic Producers and La Fédération des Coopératives du Nouveau Québec to develop markets for northern arts and crafts. A Category "A" designation under the Cultural Property Export and Import Act, allows the receiving of donations of certified Inuit artworks.

The Section conducts research and prepares publications (including a news-letter "Inuit Art and Crafts"), provides information to institutions and the public, and carries out a national and international exhibition and lecture program.

The Canadian Eskimo Arts Council, appointed by the Minister, provides advice on the orderly development of Inuit arts and crafts and helps artists to protect their work through copyright.

#### ***Culture and Linguistics Section***

The Section provides translation service in a variety of Inuktitut dialects and orthographies, publishes a quarterly magazine "Inuktitut", and administers a grants program that enables Inuit to participate in a wide range of cultural activities. The Section also promotes the development of Inuit literature and language. Finally, the Section administers the Department's funding activities in connection with the Inuit Cultural/Education Centres in the N.W.T. and Labrador.

## **Review 1983-84**

The Division continued to support a number of efforts relating to the activities of the Beverly and Kaminuriak Caribou Management Board established by the Governments of Canada, Manitoba, Saskatchewan and the Northwest Territories to manage barren-ground caribou migrating across Provincial and Territorial boundaries.

The Eskimo Loan Fund provided more than \$540,000 to Inuit and Inuit-controlled business organizations in 1982-83. An additional \$1.8 million was paid in economic development contributions. Guarantees were provided for \$6.3 million in commercial bank loans.

A comprehensive study of the production and marketing of Inuit carvings was completed. A research contract, awarded to Inuit Tapirisat of Canada to investigate the protection of Inuit art and artists, and to make recommendations for future action, was completed.

Two major exhibitions were organized to showcase Inuit art in the United States. "Arctic Vision" will travel to twelve museums and art galleries in the eastern United States over two years. "Contemporary Indian and Inuit Art of Canada", circulated in co-operation with External Affairs, opened at the United Nations in November 1983 and will continue to tour museums in the southern and western states until March 1985.

A detailed study was undertaken to document the history of the department's role in the development of Inuit art over the last twenty-five years. The study will result in a published report and a computerized index to make archival materials more accessible to researchers in the field.

Two issues of the newsletter "Inuit Art and Crafts" (formerly "About Arts and Crafts") were prepared, including a special feature on "Inuit Art at Rideau Hall", an exhibition presented at the Residence of the Governor General.

In co-operation with Canadian Arctic Producers, work continued on the compilation and publication of extensive career profiles of over 700 Inuit artists. The second edition of "Inuit Artists" was completed in the spring of 1984 and will be distributed through CAP.

A joint Cabinet submission by this department, the Department of Communications and the Department of Secretary of State on Northern Native Broadcasting resulted in the establishment of a four year \$40 million program to support the development of northern native radio and television broadcasting. The program is now administered through the Native Citizen's Branch, Department of Secretary of State.

Impacts of the Department's program in support of Inuit culture and language were evaluated and as a result recommendations were made for the future implementation and strengthening of these programs.

Four issues of Inuktitut magazine were published and distributed. Themes included:

- Inuit Music and Performing Arts
- Inuit Language and Writing Systems
- Inuit Communications

The Division supported two training projects for Inuit. One for environmental management will begin in 1984 and will be managed by the Baffin Region Inuit Association. The other is in the area of overall management training and is an update on the Frontier College Training survey conducted in 1975 by Inuit Tapirisat of Canada.

During the year special courses were offered to Inuit in Air Mechanics, Air Pilot Training and Heavy Equipment.

During the year the On-the-Job Training Program was decentralized to the Northern Program's Regional Offices in Whitehorse and Yellowknife. Similarly operations of the Eskimo Loan Fund were transferred from Ottawa to the Regional Office in Yellowknife and Quebec City.

#### *Highlights of the Year*

A revision of Schneider's Inuktitut-English Dictionary was completed. This major work contains some 23,000 entries.

In co-operation with Laval University, an analytical lexicon of modern Inuktitut in northern Quebec and Labrador was published. A dictionary of the Kangiryuarmiut dialect (Western Arctic) was published in cooperation with the Committee for Original Peoples' Entitlement.

An Inuktitut translators conference on hunting and biological terminology was sponsored jointly with the Inuit Cultural Institute.

On a pilot project basis, an educational kit covering the importance of Caribou to northern life-styles was produced for use in northern schools.

#### **Plans 1984-85**

An exhibition on Inuit printmaking techniques will be prepared for circulation within Canada. A sculpture exhibit will tour major cities of West Germany.

To increase public awareness of the department's Inuit art collection and related activities, the second installment of the Catalogue of Services and Collections and an introductory brochure on Inuit art will be prepared. Both will be available for distribution to the general public.

Four issues of Inuktitut magazine with themes including Arctic Survival, Arctic Transportation and Northern Quebec are planned.

An Inuktitut-English version of the Schneider dictionary will be published in co-operation with Laval University.

Implementation of recommendations resulting from the evaluation of the Department's programs in support of Inuit Culture and Language will begin.

The operations of the Division's Vocational Training Section will be terminated. Its responsibilities will be decentralized to the Northern Program's Regional offices or transferred to Inuit organizations in Northern Quebec.

To re-align Branch responsibilities with Branch mandates, the administration of direct loans, economic development contributions and bank loan guarantees will be transferred from the Division to the Northern Resources & Economic Planning Branch.

#### **Northern Environment Branch**

The Branch is made up of three directorates, namely Renewable Resources, Land Use Planning and Environmental Protection.

#### **Renewable Resources**

##### *Water Resources Division*

#### **Economic Function: Economic Development - Other**

##### **Responsibilities**

The division is responsible for the protection and management of the inland waters of Yukon and the NWT and arctic marine waters adjacent to the mainland and islands of the Canadian arctic. It controls the use of land and waters for hydro power developments on federal lands south of 60°. These responsibilities are carried out under the Northern Inland Waters Act, the Arctic Waters Pollution Prevention Act (for non-shipping activities) and the Dominion Water Power Act.

##### *Offshore Review of 1983-84*

In the offshore area, environmental regulation and monitoring of all drilling activities were carried out. Approval to drill were given to Esso from one artificial island, to Dome from four drillships and one artificial island, to Gulf, from their new conical drilling unit and an artificial island and to Panarctic, from four ice islands.

##### *Water Management Agreements*

Discussions with the Province of Alberta will lead to the negotiation of a water management agreement between Canada and Alberta, by which, transboundary water management issues at jurisdictional boundary crossing points can be addressed.

The Minister has asked the Province of British Columbia that consideration be given to initiating similar discussions relating to transboundary water issues between the Yukon, the Northwest Territories and British Columbia.

##### *River Basin Studies*

Draft agreements have been prepared in consultation with federal agencies and the Provinces of Saskatchewan, Alberta and British Columbia to implement the recommendations of the Mackenzie River Basin Study.

All field work on the Yukon River Basin Study has been completed. The final report is expected in the fall of 1984.

### *Legislation*

Draft legislation concerning amendments to the Northern Inland Waters Act and the Arctic Waters Pollution Prevention Act were completed and are expected to go to Cabinet for consideration early next year.

### *Inspection*

The Division continued to monitor and enforce the terms and conditions of water licences and authorizations for inland waters. Water licences and authorizations were issued for the stream crossings in NWT associated with the pipeline from Norman Wells, N.W.T. to Zama, Alberta. A public review was held to determine a satisfactory environmental regime for the placer mining industry in the Yukon.

### *Plans 1984-85*

The Division will conduct a study of ways and means of financing mine abandonment and long-term environmental protection.

Discussions will continue with British Columbia, Alberta and Saskatchewan on the negotiation of water management agreements with the Yukon and Northwest Territories.

### *Land Management Division*

## **Economic Function: Economic Development - Other**

### *Responsibilities*

The Division administers surface land rights and environmental regulations for 3.9 million km<sup>2</sup> of northern Canada lands in the Yukon and NWT and another 1 million km<sup>2</sup> of submerged lands in Canada's northern offshore regions.

### *Review 1983-84*

The Division was involved in the revision of regulations related to northern land management. The Territorial Lands and Public Lands Regulations were redrafted to comply with the federal government's policy on 6 and 5% price increases. A final draft of the Territorial Lands and Public Lands Pits and Quarries Regulations was completed in consultation with DIAND's regional offices, the territorial governments, native groups and industry. The Pits and Quarries Regulations are expected to be promulgated in 1984/85 and will replace the Territorial Quarrying Regulations.

The Division continued to represent the Northern Program in the comprehensive native claims fora on matters related to lands and resource management. Input was provided to the Committee of Original Peoples Entitlement (COPE), Council for Yukon Indians (CYI), Dene-Métis and Tungavik Federation of Nunavut claims negotiations.

Work on the preparation of a Lands Manual continued. A directive on the development of policies and several specific operational policies were completed.

Approximately 445 applications were received for land use permits for exploration and development related activities in the Yukon and Northwest Territories. After study and appropriate consultation, related sets of operating conditions requirements were prepared. Permits were issued for road construction, mineral exploration, petroleum exploration, campsites, quarrying and land clearing.

Approximately 135 quarrying permits were granted authorizing the removal of 5,503,640 cubic meters of sand and gravel in the Yukon and Northwest Territories. Large quantities of borrow material mainly dredged sand, were used for the construction of islands in the Beaufort Sea.

A final report on "The Establishment of Polar Bear Pass Ecological Site" was released to the general public in June 1983. Surface and subsurface lands and marine areas of Polar Bear Pass were withdrawn from disposition, recognizing existing rights. The surface land will be transferred to the administration, management and control of the federal Minister of Environment under the Canada Wildlife Act.

A general "Memorandum of Understanding Respecting the Administration of National Wildlife Areas" was signed in January 1984 by the Deputy Ministers of DIAND and DOE.

Background papers for the Task Force on Northern Conservation (established by the Minister in 1983) were prepared. The Task Force was asked to recommend a framework for a conservation policy strategy, and mechanisms for implementation, to the Minister and other appropriate government ministers, by mid 1984.

Consultation with Parks Canada on the establishment of the proposed North Yukon and Ellesmere Island national parks continued.

Grants of right-of-way easement for the Alaska Highway Natural Gas Pipeline and the Norman Wells Pipeline, were given in 1983.

The Division provided environmental inputs to exploration agreements negotiated by COGLA with the various oil and gas companies operating in the North and in cooperation with industry, conducted studies of gravel resources and projected granular requirements for exploration, development and production operations in the Beaufort Sea. These studies have identified areas requiring further research, to enable the delineation of resources for Beaufort Sea operations and to enable better management of this resource.

The Northern Lands Transaction system was revised in 1983/84 and will be operational in the Yukon and NWT regional offices by 1984/85. The system will provide an information base to support the disposition and management of northern lands.

In 1983 the Division published a booklet "Land Use Guidelines: Mineral Exploration Yukon and Northwest Territories" as part of a series on techniques and guidelines for minimizing environmental damage.

### *Plans 1984/85*

The Division plans to continue an in-house review of its administrative policies and procedures to identify ways and means of achieving greater operational efficiency and consistency in its administration of northern lands. Further work will be carried out on the Territorial Lands and Public Lands Regulations. The Pits and Quarries Regulations will likely be promulgated. The Division will continue to participate in native claim negotiations; prepare Orders-in-Council to withdraw surface and/or subsurface lands from disposition recognizing existing rights; and represent the Northern Program at oil and gas exploration agreement negotiations where environmental aspects are being considered. The Division will contribute to support the report of the Task Force on Northern Conservation. Land use guidelines on access roads and trail construction and hydrocarbon well sites will be published.

## *Forest Resources Division*

### Fire Management Program

## Economic Development – Other

### **Responsibilities**

Forest fire management is a key element in the administration and control of northern renewable resources. The Program provides protection to communities, timber, power transmission and communication networks, recreation areas, watersheds, erosion-prone sites and community-oriented wildlife areas.

### **Review 1983-84**

Fire prevention continued to be a priority. Combustible materials of natural origin were removed from the perimeters of a number of communities. The public relations program was amplified by an increase in fire prevention messages on radio and television networks. In some instances, these messages were translated into local native languages.

Fire detection programs in both territories were upgraded this year with the addition of fire towers in both Territories and further development in the use of the automatic lightning detector network. Yukon has negotiated with Alaska for the exchange of lightning strike locations using compatible computer systems.

Intensive training of both permanent fire management staff and emergency fire fighters continued. Emergency fire fighters received St. John Ambulance emergency first aid instruction in addition to fire suppression training. Specialized courses were given to permanent staff in aerial observation, helicopter management, air attack methods and "mixmaster"<sup>1</sup> operations.

Other activities included studies on the implementation of a fire season severity rating system; a prescribed burn in Yukon to assess the value of fire in improving Dall sheep range; and the finalization of modifications and the selection of spare parts for the four CL-215 aircraft being bought for fire suppression use.

The fire suppression program was relatively successful this year due, in part, to increased efficiency and favourable weather. Burned areas were approximately 333 500 hectares for 540 fires as compared with 548 000 hectares for 561 fires in the previous year. Fire suppression expenditures were about 10% lower than in the previous year.

Final drafts of Fire Control and Prevention Regulations were drawn up and Fire Protection Agreements with the Governments in Yukon and the Northwest Territories were executed. The Department signed, with all other Canadian fire agencies, a "Mutual Aid Resources Sharing Agreement" (MARS Agreement), designed to expedite the exchange of resources in fire emergencies. In addition the Canadian Interagency Forest Fire Centre was incorporated with the Federal Government and all Provincial fire agencies as members. The Centre will collect, analyze and disseminate operational fire situation reports to all members on a daily basis and will coordinate and administer the MARS Agreement.

### **Plans 1984-85**

Improvements in the fire detection program will continue with one tower being added in the N.W.T. and a direction finder installed with the automatic lightning detector system. Yukon plans on integrating its computerized lightning detection system with the one in use in British Columbia and will introduce smoke jumpers to complement its existing initial attack program. Both Regions plan to continue with the intensive training programs and the fire hazard reduction activities around communities and will participate in a study of a computerized integrated fire management system.

## Forest Management

### **Responsibilities**

This program provides for the management of the forest resources of the Yukon and the Northwest Territories. The primary objectives are to maintain a continuing supply of wood and to create jobs for northern residents.

### **Review 1983-84**

A Departmental forest policy workshop was held early in the year to develop a policy position paper. The subsequent paper received wide distribution within the Northern Program and discussions were held with the Territorial Governments. The next draft will be sent to the Yukon and Northwest Territories for review.

The planning of a forest inventory program continued as a departmental priority. A number of chapters of a Forest Inventory Manual were completed and a detailed outline of a few others was prepared. In Yukon, a photo interpretation contract was let for a reconnaissance survey and good progress made in the development of an area compilation program. In the N.W.T., inventory work continued in the Trout and Slave Management Units.

Due to the high cost of heating oil, many residents are cutting their own fuelwood. As a result, fuelwood management plans and elementary access roads into high yield areas received particular attention. The N.W.T. Region developed a "how-to" pamphlet on fuelwood harvesting and wrote a metric scaling manual for use by all forest product producers. A draft of a Procedures Manual for Timber Disposition Activities was also completed by the N.W.T. Region.

### **Plans 1984-85**

Work will continue on inventory and fuelwood planning activities. Regeneration surveys will be carried out in the Hyland River Valley and a seedling program for reforestation of cutover areas in the vicinity of Watson Lake will be developed.

The forest policy paper will be completed. Draft instructions regarding new legislation for forest management and fire management will go to the Department of Justice.

<sup>1</sup> A fire-retardant chemical is mixed with the water used in water bombers.

## Northern Land Use Planning

Economic Function:  
Economic Development - Other

### Northern Land Use Planning Policy

#### *Responsibilities*

The Land Use Planning Directorate, Ottawa, functions as a Secretariat to the territorial Policy Advisory Committees and provides policy, technical and professional support to the departmental Regional Planning Offices in Yukon and the NWT. The Secretariat coordinates the activities of the Federal departments and agencies in regard to land use planning.

#### *Review 1983-84*

In July, 1981, the Minister, DIAND, announced Cabinet approval of a new Northern Land Use Planning policy.

Discussions with the Yukon Territorial Government and the Council for Yukon Indians resulted in an agreement being drafted on planning principles, and on establishing and implementing land use planning in Yukon. A similar agreement has been reached with the Government of the NWT, and all of the NWT Native Organizations except Committee for Original Peoples Entitlement (COPE). A separate agreement has been drafted with COPE, specific to the proposed Inuvialuit Settlement Region.

Financial approval has been given to implement an expanded planning program, and work is underway to establish the various structures in the planning process. Additionally, discussions continue with other Federal departments, the territorial governments and native organizations to develop land use planning working agreements to facilitate effective resource allocation and operational planning.

#### *Plans 1984-85*

The Land Use Planning Program will be so structured that upon implementation, it will provide coverage of the entire North as quickly as possible. Initial emphasis will be on areas where land and resource use pressures are greatest, such as the Beaufort Sea; Liard Valley; Mackenzie Valley; Southern Yukon; and Lancaster Sound.

## Lancaster Sound Regional Study

Economic Function:  
Economic Development - Other

#### *Responsibilities*

An Environmental Assessment Review Process Panel, considering an application to drill an exploratory well in Lancaster Sound, concluded in early 1974 that the region's unique combination of physical, environmental and social characteristics required through review before decisions could be taken to ensure the optimum conservation and utilization of the region's abundant resources.

Acting on these recommendations, DIAND began, in the fall of 1979, a comprehensive regional study with a Steering Committee and Working Group drawn from five federal departments and the Government of the Northwest Territories. A data base summarizing all relevant, physical, environmental and socio-economic data as well as information on present and future activities was assembled by the Working Group in data atlas and background reports. A synthesis of this information and an analysis of the issues bearing on regional planning, was produced in the form of a Green Paper, released by the Minister, DIAND, in July, 1982. A final public review phase was begun in January and February 1983, with meetings with the councils and the general public of Arctic Bay, Grise Fiord, Pond Inlet and Resolute.

#### *Review 1983-84*

A workshop held in Pond Inlet in June 1983 and attended by representatives of the four communities, native and conservation organizations, industry and government, completed the final public review phase of the Study.

This public review provided a forum for the concerned public to respond to the Green Paper, and to set the stage for the implementation, within the framework of the Northern Land Use Planning Policy, of land use planning for the region. The final report on the public review phase is expected to be released by the Minister early in 1984.

#### *Plans 1984-85*

The initiation of a comprehensive land use planning process for the Lancaster Sound region has been accorded high priority by DIAND within the overall implementation of the Northern Land Use Planning Program in the NWT.

Effective participation by residents will be an integral component of the initiative. The findings of the Lancaster Sound Regional Study and the data base assembled by the interdepartmental working group, will be of key importance to the evolution of a land use plan for the Lancaster Sound region, acceptable to the major interest groups.

## Northern Environmental Protection

Economic Function:  
Economic Development - Other

#### *Responsibilities*

The Directorate coordinates, develops and recommends policies, strategies, plans and regulations for environmental protection in the Yukon and the N.W.T. and in the adjacent offshore regions. Managing an applied northern environmental research program and sponsoring other applied research to support this role, the Directorate also develops and implements policies concerning environmental impact assessment of northern development projects and implements the Federal Environmental Assessment and Review Process within the Northern Program.

*Protection of the Environment Through Applied Research and Related Functions*

#### *Review 1983-84*

Management of most of the applied research supported by the Directorate remained with the ALUR<sup>1</sup> program. The extensive data on nutrient loading of northern lakes is still being analyzed and a Eutrophication Manual is being drafted to guide management of lakeside developments.

Two of the three uranium-related studies are being completed this year. One study is to establish pre-mining background data on the distribution of radionuclides occurring naturally in the vegetation, soils and sediments adjacent to, and far removed from mineralization in the Eastern Keewatin. The other study focussed on the distribution processes and patterns of radionuclides and heavy metals in the lichen-heath vegetation community in the same area.

<sup>1</sup> Arctic Land Use Research

The last uranium-related project is to develop a predictive hydro-geologic model to determine the effects of uranium (or other) mine tailings on the thermal regime of the terrain in a permafrost environment.

An interdepartmental study to evaluate sediments and sedimentary processes in the Beaufort Sea was again financially supported. This work is vital to the assessment of offshore hydrocarbon exploration and development activities and likely concomitant exploitation of granular resources necessary for artificial islands.

Financial support and project management was again provided for the investigation of the impact of ice-breaking ships on whales. Severe ice conditions provided an excellent opportunity to monitor the sound production of an ice-breaker and ore carrier and to observe the reactions of several species of marine mammals.

Two wildlife harvesting studies were continued and supportive funding again provided. DIAND coordinates the funding of these studies and each has produced its first technical report.

The series of Ecological Bibliographies on the Arctic Islands Archipelago was terminated at Vol. 11 and a cumulative index prepared. Publication of the last volume and the index is planned for 1984/85. Participation in the interdepartmental Baffin Island Oil Spill (BIOS) project continued through the BIOS Management, Technical Committee and through the completion of the department's field program. A report summarizing DIAND's Study of the uptake and depuration of dispersed oil in selected invertebrates will be published by the BIOS project office. The department will be contributing to the publication of the issue of Arctic which summarizes the findings of the BIOS project as a whole.

Participation continued in the Arctic Marine Oil Spill Program (AMOP) and the last of the Eastern Arctic Marine Environment Studies (EAMES) integrated reports were published.

A study of the distribution of phytoplankton in the Western Arctic was begun. This work will provide the information required for the future management of bowhead whales.

A major interdepartmental interdisciplinary study, the Beaufort Environmental Monitoring Program, was begun. This study will develop a monitoring program in the Beaufort, should hydrocarbon development proceed there. Reports on the first year's work have been prepared.

A field study was conducted on the potential use of flocculants in the placer mining industry (Yukon) to help establish a basis for their possible full scale use in meeting proposed guidelines for suspended sediment in placer mining effluent water.

A one-day workshop was held on sumps-drilling fluid disposal to determine the "state of the art", exchange views between industry, researchers and regulators and provide direction for future initiatives.

A research project was initiated to determine the toxicity to fish of thiocyanates (a by-product of gold ore processing).

#### **Plans 1984-85**

It is hoped that final reports on all studies completed in 1983/84 will be published during 1984/85.

The computer model on the effects of mine tailings on a permafrost environment will be completed and used to evaluate possible tailings disposal strategies.

Work will continue on the Beaufort Sea Environmental Monitoring Program, the effect of ice-breakings ships on marine mammals, and on wildlife harvest studies.

A study to help bridge the gap between laboratory experiments and field use of flocculants to improve water quality in placer-mined streams, will begin.

Synthesis of completed research on drilling fluid disposal in permafrost regions and on terrestrial oil spills will be done with dual objectives of education and transfer of results to regional regulators and the identification of knowledge gaps and future research direction.

In February 1984 DIAND Minister, John Munro, announced a revised \$130 million federal planning and research program which will provide a significant boost to social and environmental research in the Canadian Arctic. The Northern Oil and Gas Action Plan (NOGAP) is proposed as a seven year program to allow government preparedness for future arctic oil and gas production. The program's

overall management and approximately 15% of the total funds will reside with DIAND, while the remaining research will be carried out by the appropriate federal departments and territorial governments.

#### *Environmental Assessment Division Offshore Environment Division*

#### **Protection of Environment through Impact Assessment and Related Functions**

Both Divisions participated in the evaluation of interventions from other departments, in the proponent's deficiency statement and in the public hearing sessions for Beaufort Sea Environment Impact Assessment. Staff were called upon by the Panel to present expert testimony in departmental research efforts. Assessment staff conducted review of RERC screening and provided input into preliminary project design for the North Canol Road project. Screening of Panarctic's Bent Horn Project began.

A review of issues relating to harbour sites for the Beaufort Sea was begun. Sites such as Stokes Point, King Point and small development projects were reviewed for environmental significance. The Assessment Division examined issues re Yukon placer mining environmental guidelines development: evaluation of guidelines through public hearing process; advice within NAP on environmental implications of recommendations from public review committee; negotiation with DFO and DOE on government position.

Advice and policy formulation activities continued for native wildlife harvest studies, placer mining guidelines, and environmental assessment aspects of northern development projects. The divisions provided advice and recommendations on terms and conditions for environmental requirements for the Norman Wells project, and provided advice and input into the development of a project monitoring program.

A review of the procedures for the implementation of EARP within the Northern Program was conducted. This included a review of the FEARO Cabinet memorandum on EARP, and consultations with outside agencies leading to the preparation of a draft brochure clarifying and updating screening procedures for EARP in the Northern Program. Within a public registry, documentation of status within the EARP process of proposed developments in the North was maintained.

NAP input to the Canadian Climate Program was coordinated. The divisions participated extensively in a study to evaluate the potential for use of flocculants in the Yukon placer mining industry.

The divisions coordinated 1) the Northern Program's participation and other government departments funding of Native Wildlife Harvest Studies in the Keewatin and Baffin Region of N.W.T. and 2) the Northern Program's input into the negotiations on establishing a Porcupine Caribou Management Agreement.

The Offshore Division participated in environment consultative committees, Kativik Environmental Advisory Committee for northern Quebec, Hudson Bay Oil and Gas committees and APPWG.

The Offshore Division participated in interdepartmental research exercises and joint government industry research projects through staff involvement with AMOP, BIOS, ESRF technical committees and field projects.

Continued advice and assistance was provided to regional and other inter-departmental review committees. An inter-governmental Polar Bear Contingency Plan was developed.

The Division developed a policy on the use of oil based muds for oil and gas exploration and production activities North of 60°.

#### *Environmental Assessment Division*

##### **Plans 1984-85**

The Norman Wells development and the North Canol Road projects will be monitored to improve the environmental assessment process and to develop suitable environmental protection standards.

Advice will be provided to headquarters and the regions on native wildlife harvest studies, placer mining and other activities.

#### *Offshore Environmental Division*

##### **Plans 1984-85**

The Offshore Division will continue to analyze and assess the environmental impacts of minor and major offshore industrial developments and will concentrate on the implementation of the FEARO panel recommendations for the Beaufort Sea Hydrocarbon Development.

The Division will continue in its advisory role to a number of inter-departmental advisory committees and joint industry/government working groups concerned with offshore environmental protection.

#### **Environmental Studies Revolving Fund**

##### **Responsibilities**

The Environmental Studies Revolving Fund (ESRF), established under Section 49 of the Canada Oil and Gas Act (1982), provide funding for environmental and social studies related to oil and gas activities on Canada Lands. The studies are financed entirely from levies imposed on interest owners/holders on Canada Lands. Two funds are established under the Act, one for the areas North of 60° and administered for the DIAND Minister by the Northern Affairs Program and one for the south administered for the Minister of EMR by COGLA. There is a government-industry Advisory Board for each fund. The Northern ESRF Advisory Board is chaired by the Director-General, Northern Environment and the day-to-day management of the Fund is the responsibility of the Director, ESRF (IAND) who also serves as Executive Secretary to the Board. He is supported by joint government-industry Program Study Committees of technical experts appointed for the various subject areas.

##### **Review 1983-84**

The Environmental Studies Revolving Fund (IAND) became operational during this period and progress in establishing the Fund was rapid following Treasury Board approval in February 1983.

Highlights include:

- Publication of the final Regulations in Part II of the Canada Gazette outlining the 8 Prescribed Regions of the ESRF (IAND);
- Establishment of levies and billing the oil and gas interest owners/holders to finance the Fund;
- Recommendations by the ESRF Advisory Boards of Priority Subject Areas for study and a budget for the northern Fund for 1983 were approved by the Ministers in August 1983.
- Publication and distribution of Guidelines for Study Proposal, and Payment from Funds; and completion of the financial procedures for the Funds;
- Establishment of Program Study Committees for the Environmental Studies Revolving Funds;
- Publication of the first call for Study Proposals in "Update" (September 16, 1983) with a 30-day deadline for submission;
- Evaluation of 138 Study Proposals received by the two Funds and selection of 24 successful applicants was completed by the 1st. week of December 1983.

The ESRF (IAND) contributes to 21 of the 24 studies for 1983 and \$747,000 has been committed for 1983 studies. Included in this total are seven studies (valued at \$211,300) related to oil spill research and countermeasures, including four projects under BIOS (Baffin Island Oil Spill) program. Three of the studies were previously funded by the Canadian Offshore Oil Spill Research Association (COOSRA) and support was continued by ESRF.

A second request for study proposals was published in "Update" on February 23, 1984.

##### **Plans 1984-85**

The ESRF Management will complete the second round of study selections for 1983. Study requirements and a budget for 1984 are being identified for final approval by the Minister in May. The 1984 levy determination will be calculated in mid-May and a further request for study proposals will be issued in mid 1984. Several studies will be completed and the results published.

## Northern Resources and Economic Planning Branch

### *Mining Management and Infrastructure*

## Economic Function: General Government Services

The Mining Management and Infrastructure Directorate is comprised of three Divisions: Mineral Policy Division, Mining Administration Division and Infrastructure Division. The Directorate is responsible for functions similar to provincial departments of Mines and Transportation. The Directorate formulates policies; drafts legislation and regulations to promote orderly management and development of mineral resources in the NWT and Yukon; assesses the technical, economic, financial and social impacts of mineral projects and liaises with the mining industry and other interested parties. In the field of transportation, it evaluates needs for roads and airstrips, in support of economic development in the North. The Directorate provides functional direction to DIAND regional offices and advises senior federal and Territorial officials, as well as the mineral industry, labour and Native organizations, on all mineral related matters; and carries out mining administration functions.

### *Mineral Policy Division*

#### **Responsibilities**

The Mineral Policy Division develops policies to encourage exploration and orderly development of mineral resources in northern Canada; carries out short-term and in-depth studies of the economic and financial aspects as well as the socio-economic impacts of mineral development; monitors mining projects to ensure that government objectives, as stated in the agreements with industry, are achieved; conducts basic research on mineral issues; and provides advice to senior management on the development of non-renewable resources in the North.

#### **Review 1983-84**

Depressed world markets and low metal prices continued to affect the northern mineral industry into 1983 but some improvement was apparent as the year progressed. Cyprus Anvil's Faro mine in Yukon re-opened in June after an agreement was reached between Dome Petroleum/Cyprus Anvil and the Federal Government on the joint financing of a \$50-million mine re-opening plan. The plan involves a two-year stripping program designed to improve the long-term viability of the mine but no concentrate will be produced. The plan is providing employment for about 240 people and has helped to stimulate the Yukon economy.

Under the agreement, the federal government will provide approximately \$4 million through existing programs under Section 38 of the Unemployment Insurance Act and the NEED program in addition to a \$19.6 million interest-free loan to the end of 1984. The Yukon Territorial Government is also providing approximately \$1 million in additional wage top-up. A Monitoring Committee composed of IAND and YTG members established under the terms of the agreement, is reviewing implementation of the stripping program and company efforts at disposition and reactivation of the mill. A Canadian Transport Commission study, underway at year end, is examining the costs and problems of Yukon transportation, with emphasis on the requirements of Cyprus Anvil.

The Pine Point mine recommenced operations in June after being shut down since January 2, 1983. Mine re-opening was achieved after Cominco negotiated a package of concessions in co-operation with its unions, the railway and its smelter in return for a commitment to operate the mine/mill complex for a minimum of at least five months. Federal Government officials from CEIC, IAND and EMR were involved in the negotiation of some \$4.0 million in financial assistance to the company, under Section 38 of the UI Act and the NEED program, for an advance stripping program.

The Government of the Northwest Territories also provided supplementary wage top-up assistance in the amount of \$1.1 million.

Renewed emphasis was placed on the development of a northern mineral policy following resolution of the Cyprus Anvil and Pine Point mine closures, which had absorbed most of the Division's resources for almost a year. Efforts were

concentrated on the assessment of the role of mining in the northern and national economies as well as the competitiveness and outlook for the northern mineral industry. Formulation of the policy will require consideration of the diverse, complex inter-relationships which affect northern mineral development. As part of the ongoing consultation, which has been an important element in the policy development process, a series of eight mineral policy issue papers will be released in 1984. Each paper will provide a data base and a concise discussion of one key policy issue.

The Division provided support to the Director of the Mining Management and Infrastructure Directorate both in his capacity as Chairman of the Nanisivik Monitoring Committee and as the Federal Government representative on the Nanisivik Board of Directors. An analysis to examine possibilities for increasing native employment at the mine was completed by the Monitoring Committee. As a result, a Federal/Territorial working group was established to develop practical steps to employ more native people in mine operations. Monitoring of other mine operations, including the Polaris and Cadillac projects, continued during the year.

### *Mining Administration Division*

#### **Responsibilities**

The Mining Administration Division, Headquarters, develops policy related to the regulation of the Northern Mineral Industry, which includes providing for the consultative process with industry and initiating the drafting of appropriate acts and regulations relating to the administration and disposition of mineral rights in the Yukon Territory and the Northwest Territories. The Division administers the royalty provisions of the Yukon Quartz Mining Act, Canada Mining Regulations and Territorial Coal Regulations and advises various government agencies on current and proposed exploration and mining developments. It maintains a microfiche library of assessment reports, geological reports and other mineral resource information. The Division comprises the Mining Lands Section and the Mining Resources Section in Ottawa and provides functional direction to IAND regional offices.

### *Mining Lands Section*

The Mining Lands Section develops policies and initiates the drafting of appropriate legislation relating to the administration and disposition of mineral rights including royalties, in Yukon and the Northwest Territories.

The Mining Lands Section drafted proposed amendments to the Canada Mining Regulations and is in the process of arranging final legal drafting by the Department of Justice of a proposed revision to the Territorial Coal Regulations. The Section contributed the background paper, Northern Mineral Legislation, to the Northern Mineral Policy series. This paper describes existing northern mining legislation and indicates what changes may be desirable.

### *Mining Resources Section*

The Mining Resources Section maintains a microfiche library on all published geoscientific reports and unpublished assessment reports on mineral properties in Yukon and the Northwest Territories. The prime concern of this office is the assessment and definition of regional mineral potential for specific commodities and for areas in the Territories relating to proposals concerning land use, parks, land claims, transportation routes and power developments. This Section and the Mining Administration Division as a whole inform and advise the Minister on current and proposed mine and exploration developments in the North. Monthly Mines and Mineral Statistics and annual Mines and Mineral Activities reports are produced by the Mining Resources Section for use by the mining industry, public and government. The Section maintains a public microfiche library of released mining assessment or representation work reports covering northern mineral properties, company files and published material concerning mining companies operating in the North. The Section maintains the Department's contribution to GEOSCAN, the Canadian bibliographic mining properties computer access file.

The Mining Resources Section produced the first background paper in the Northern Mineral Policy Series entitled Mines and Important Mineral Deposits of the Yukon and Northwest Territories, 1982. The report provides an overview of mineral deposits in the North, their geological environments and origins.

### **Regional Branches - Yukon and Northwest Territories**

The Yukon Region Branch and Northwest Territories Region Branch of the Northern Affairs Program are major functional groups under the direction of regional Directors General. The Regional Branches administer the mandate of the Program within the respective Territories. Offices are centered at Whitehorse, Y.T. and Yellowknife, N.W.T.

The Regional Branches have the following sub-units: The mining Recording Section, The Geological Services Section, and The Mine Inspection Section (Yukon Region only).

#### *Mining Recording Section*

Mining Recording Offices maintain complete recording systems of mineral rights in both Territories. For administrative purposes, the Territories have been divided into seven mining districts. A mining recording staff is responsible for the administration and disposition of mineral rights within each district in accordance with applicable legislation. There is a Manager, Mineral Rights in each Territory whose principal function is to ensure that uniform practices are followed in the mining recording offices and that these offices are operated in accordance with the legislation.

#### *Geological Services Section*

Geological Services Section provide a geological services to the mineral industry in both Territories. Offices are maintained at Whitehorse and Yellowknife. Two core libraries, the H.S. Bostock Library in Whitehorse and the C.S. Lord Library in Yellowknife preserve diamond drill core and provide facilities to study core and rock samples.

Each office has a large geological library of published and unpublished (assessment work) reports in hardcopy and microfiche format.

Officers of Geological Services Sections in both territories conduct bedrock geological mapping surveys and mineral occurrence investigations. Prospecting courses are taught in various communities each year by the geological staff. Members of the staff advise the mineral industry, government departments and research scientists on geological and exploration matters.

#### *Mine Inspection Section*

In the Yukon, the Mine Inspection Section, with an office at Whitehorse, gives advice on the Mining Safety Ordinance and Mine Safety Regulations of the Yukon Territory. It also prepares new safety legislation when required. A regional mining engineer with a staff consisting of a district engineer, an electrical-mechanical engineer, an environmental engineer, a mine rescue superintendent, a claims inspector and a clerk, are responsible for the following: inspection of mines, quarries and blasting operations to ensure compliance with safety legislation; inspection of mineral claims to ensure compliance with safety legislation; and inspection of mineral claims to ensure compliance with the Yukon Quartz Mining Act and the Yukon Placer Mining Act.

### **Northwest Territories**

#### *Mineral Production*

Mineral production in the Northwest Territories during the calendar year 1983 was valued at \$532 million compared with \$468 million in 1982. Despite the increase in mineral production value, the continuing economic recession and concomitant low prices for base metals and tungsten combined to make 1983 a difficult year for some mines and mining communities in the Territory. Gold production remained the bright spot in the industry, with a 67 per cent increase of production value from \$91 million in 1982 to \$153 million in 1983. The value of tungsten production ( $WO_3$ ) declined by \$24.6 million because of the ten month shutdown of Canada Tungsten's tungsten mine and mill at Tungsten.

Eight mining companies treated ore from 11 mines at 10 milling plants. Falling lead and zinc prices forced Pine Point Mines Ltd. to shut down on January 2, 1983. However, the mine resumed operation on June 15, 1983. Similarly, uneconomic tungsten prices forced Canada Tungsten Mining Corporation Limited to shut down its Cantung mine and mill operation at the end of January 1983.

The mine resumed production on November 28, 1983. Gold production was reduced at the Cominco's Con Mine because of a strike that lasted from mid-July to mid-September, 1983. Giant Yellowknife Mines Ltd. reduced gold ore production by 25 per cent at the end of the first quarter in order to obtain a more complete recovery of the indicated mineral inventory.

On the positive side, both Echo Bay's Lupin Mine and the Cullaton Lake Mine increase their gold production. Echo Bay Mines Ltd. increased mill capacity by 20 per cent from 900 to 1100 tons per day. Cullaton Lake Gold Mines Ltd., following a successful production year, plans to increase mill capacity to approximately 360 tons per day in 1984 to accommodate ore production from its new Shear Lake Mine. Also, Giant Yellowknife Mines Limited commenced gold production from the Salmita Mine in August, 1983. Ore from Salmita was milled at the rehabilitated Tundra mill, 3 km to the south of the Salmita Mine. Terra Mines Limited, after a two-year period of limited production but intensive underground development and exploration, doubled the capacity of its Camsell River silver mill from 225 to 500 ton per day. In the High Arctic, operations at the two zinc-lead mines, Polaris and Nanisivik, continued successfully during the year despite low lead and zinc prices.

Production from the three lead-zinc mines increased 7.1 per cent for lead and 4.7 per cent for zinc compared with the previous year notwithstanding the fact that Pine Point Mines Limited was closed for six months.

The mineral industry of the Northwest Territories accounted for 96.9 per cent of the tungsten, 26.5 per cent of the lead, 23 per cent of the zinc, 12.9 per cent of the gold and 4.6 per cent of the silver produced in Canada during 1983. This production accounted for 6.5 percent of the value of Canadian metallic mineral production compared with 5.6 per cent in 1982.

The operating mines and mills employed 2,369 persons at the end of December, 1983. Of the 765 employees laid off through the closing of the Pine Point and Canada Tungsten mines, some 662 were re-employed when the mines reopened later in the year.

### *Development*

At year end 1983, Cullaton Lake Gold Mines Ltd. moved forward with pre-production development of the Shear Lake gold mine located some 5 km north of the Cullaton Lake Mine. A decline was driven through seven gold bearing zones and drifts were extended from the decline toward the main shear zone, which is the production target zone.

At Cominco's Ptarmigan Mine, 20 km by road northwest of Yellowknife, ramping, drifting and bulk sampling were conducted. Despite encouraging results, a production decision was postponed because the Con mill was operating at capacity to process ore from the Con mine.

Cadillac Explorations Limited's base metal-silver property, at Prairie Creek, on which a mine and mill construction was near completion during 1981, was placed on hold in mid-1982 without achieving initial production. At year end 1983, no new developments were apparent which would bring the mine into production during 1984.

In July, Terra Mines Limited proceeded with development on its Bullmoose gold property, 80 km southeast of Yellowknife. The company hopes to prove sufficient reserves to bring the property into production.

Positive signals in the gold mining sector are the successful 1983 operations at relatively new mines, namely Echo Bay's Lupin and Cullaton Lake's B-Zone gold mines and the continuing operation of the Con and Giant mines, at Yellowknife. In the longer term, Amax of Canada Limited is expected to bring its Mactung tungsten mine (17) on the NWT-Yukon border into production, perhaps during 1986 or 1987. The strengthening of zinc prices and marginal improvement in tungsten prices during the second half of 1983 indicated some metal market recovery, although market uncertainty continues.

### *Mineral Exploration*

Mineral exploration expenditures continued to decline in 1983 to an estimated \$18 million compared with approximately \$22 million in 1982. Expenditures on gold exploration and gold property development amounted to about half of the total expenditure. Some \$4 million was expended on exploration for base metals in the Pine Point District and near the Nanisivik Mine in northern Baffin Island. Expenditures on uranium exploration continued to decline and probably amounted to about \$4 million.

In 1983, there were more gold exploration and mine development projects (53) than base metals projects (19) and uranium projects (25) combined. A total of 115 properties were explored.

### *Outlook*

Exploration and development expenditures in the Northwest Territories declined marginally in 1983 to an estimated \$18 million from the previous year. The shift from base metal and uranium exploration to gold exploration and development continued. The establishment of the Salmita gold mine as a new producer in 1983, was followed by Cullaton Lake Mine's decision to bring its Shear Lake gold mine into production in 1984 to augment gold output. Exploration and development work on Terra Mine's Bullmoose gold property has been encouraging and a production decision may be forthcoming in 1984.

### **Yukon Territory**

#### *Mineral Production*

Mineral production in the Yukon Territory during the calendar year 1983 was valued at \$59 million compared with \$169 million in 1982 and \$268 million in 1981. The drastic decline in mineral production value during 1983 resulted from the shutdown of all lode mines in Yukon during the first half of the year. The drop in value was the largest in percentage terms recorded among the provinces and territories of Canada. Gold production from Yukon placer gold mines was the leading sector accounting for \$50.5 million or 85 per cent of the total mineral production value of \$59.4 million.

Whitehorse Copper Mines Ltd. closed permanently at the end of 1982 because of ore reserve depletion. Cyprus Anvil Mining Corporation's Faro Mine closed in June, 1982 and reopened in May, 1983 to commence an overburden stripping program. This program which is expected to result in mill production of lead and zinc concentrate by late 1984 or 1985, once issues related to rail transportation and hydroelectric power contracts are resolved. At year-end rising zinc prices provided optimism for the recommencement of zinc and lead concentrate production at Cyprus Anvil's Faro Mine. United Keno Hill Mine's silver operations reopened at a 25 per cent reduction in production rate in August, 1983, after being shut down since July, 1982.

Two new small producers mined high-grade silver veins. Springmount Operating Company produced 70.7 tonnes of ore at its Mount Keno property in the Keno Hill area and Dawson-Eldorado Gold Exploration Ltd. produced 454 tonnes at its PLATA property.

The Yukon accounted for 43.3 per cent of the gold, 1.6 per cent of the silver, and 0.2 per cent of the lead produced in Canada in 1983. Yukon mineral production value declined to 0.8 per cent of the value of total Canadian metallic mineral production in 1983 compared with 2.45 per cent in 1982.

At year-end 1983, the two operating lode mines, Cyprus Anvil and United Keno employed 372 persons compared with 1 030 persons employed at the Yukon's three operating lode mines during the first half of 1982. An estimated 750 persons were seasonally employed in placer mining operations during 1983. In addition some 18 persons were seasonally employed in three underground placer gold mines and 40 persons were employed seasonally in exploration development and production in small-lode underground mines.

#### *Placer Mining*

Gold production from Yukon's 260 placer mine operations increased 25 per cent in 1983 to 2 932 kg (94 258 troy oz) of crude or impure gold compared with 2 290 kg (73 641 troy oz) in 1982. Statistics Canada reported an additional 76 kg of placer gold which was sold to Yukon jewelry manufacturers or forwarded to gold refineries in 1983.

A public review of the proposed Yukon Placer Mining Guidelines was conducted by the Public Review Committee. The hearings were held in the major Yukon placer mining communities, during 15 days from Sept. 7 to Nov. 8, 1983. The Committee invited and heard virtually every interest group in the Yukon and over 150 presentations and submissions were received. The Committee submitted its final report with recommendations on the issue to the Minister of Indian and Northern Affairs and his colleagues, the Minister of Fisheries and Oceans and the Minister of Environment on January 17, 1984. The Minister of IAND noted at that time that further discussions would take place before any substantive comment was made.

#### *Mineral Exploration*

Mineral exploration expenditures continued to decline during 1983 to an estimated \$11 million compared with \$22 million in 1982 and \$50 million in 1981. The year was characterized by low levels of property work. The most active areas were in the Wheaton River area, south of Whitehorse, for gold-silver deposits, and in the Rancheria area west of Watson lake, for shale-hosted silver-lead-zinc.

During 1983, 68 properties were explored, of which 25 were explored for precious metals, 22 for lead and zinc, 13 for molybdenum or tin, 10 for tungsten and four for copper.

#### *Outlook*

Prospects for 1984 remain uncertain as improved zinc, lead, tungsten, and silver prices are required to bring full recovery and renewed growth to the lode mine industry. Beyond future capacity production of zinc and lead concentrate at Cyprus Anvil's Faro Mine, the most important large scale project on the horizon is the development of Amax of Canada Limited's Mactung Mine. This \$171 million mine and mill project on the NWT-Yukon border could be on stream by late 1986 or 1987, at an initial scale which will depend on world tungsten prices and demand. Technical and engineering studies are continuing. A production decision could be made as early as mid-1984 if tungsten markets show sufficient signs of recovery.

The issue of amendment and possible implementation of the Federal Government's draft (proposed) Yukon Placer Mining Guidelines, governing water use in Yukon placer mining operations is expected to be resolved in 1984.

#### *Infrastructure Division*

### **Economic Function: Transportation**

#### **Responsibilities**

The Northern Infrastructure Division is responsible for developing and implementing policy and for the planning and construction of transportation infrastructure required to stimulate and serve resource developments and intercommunity needs of the two territories. In the planning, directing and co-ordinating of the Northern Roads Program, special emphasis is placed on the socio-economic, financial, environmental and technical considerations in the construction of new roads. The responsibility for maintenance and management of roads has been transferred to the territorial governments.

#### **Review 1983-84**

A new Northern Roads Policy together with a five-year capital plan was approved by Cabinet on July 7, 1983. This new policy clearly puts the control of policy, planning and construction with the Federal Government for all new major road construction and inter-territorial road construction.

The five-year capital plan is based on an annual budget of \$19.3 million and will allow completion of all projects that have been started and the implementation of new projects such as the reconstruction of the North Canol Road and the completion of the section of the Mackenzie Highway between Fort Simpson and Wrigley.

*Liard Highway:* With the exception of some minor clean up this project has been completed. The road is scheduled to be officially opened in June 1984 and will provide a link between Fort Nelson, B.C. on the Alaska Highway and Fort Simpson, NWT on the Mackenzie Highway.

*Dempster Highway:* Funding under the Special Recovery Capital Projects Program was approved. This provided an additional \$2.6 million in 1983/84 and a further \$5.3 million in 1984/85. This will allow completion in 1987, two years earlier than originally planned.

Reconstruction of km 0-125 at the southern end of the highway was commenced in 1983/84. Work on the more northerly section included gravel surfacing, new structures and improvements to ferries and river crossings.

A study of the volume and type of traffic using the Dempster Highway was begun. Present traffic includes vehicles in support of the oil and gas industry and for the resupply of Inuvik, Fort McPherson and Arctic Red River. The volume of tourist traffic in the summer is significant.

**Carcross-Skagway Road:** Apart from some final surfacing the British Columbia Section of the highway was completed in 1983. The section between the Alaska Highway and Carcross was selected for accelerated construction under the Special Recovery Capital Projects Program. Several contractors carried out construction during the year. The road should be completed in 1985/86.

**Mackenzie Highway (Fort Simpson to Wrigley):** Final design work for this section of the Mackenzie Highway was completed in 1983/84 in preparation for construction starting in 1984/85. A training plan to enable local people to gain skills through work on the road has been developed in co-operation with C.E.I.C.

**North Canol Road:** Planning for the reconstruction of sections of the North Canol Road was continued so that upgrading of the worst sections could begin in 1984/85.

**Studies:** Two benefit-cost studies were carried out in support of road projects. The study of the reconstruction of the road between Carcross and the Alaska Highway showed that the benefits of an upgraded road through savings in travel time, lower road maintenance costs, improved safety and lower vehicle maintenance and operating costs justified the construction cost. The second study supported the extension of the Mackenzie Highway to Wrigley.

Work continued on the analysis of the Cyprus Anvil mine's transportation requirements. This included working closely with the Canadian Transport Commission which is conducting an inquiry into Yukon transportation. The preliminary report was assessed, discussions were held with the various players involved and comments were submitted to the Inquiry Team. A final report and recommendations are expected to be released in early April, 1984.

An Infrastructure Strategy paper was one of a series of papers prepared in the development of a Northern Mineral Policy. The paper summarizes government's previous participation in the provision of infrastructure in support of the mining sector and considers how government can participate in the future.

**Air Facilities Policy:** A joint memorandum to Cabinet was prepared with Transport Canada, seeking Cabinet approval for a six year extension to 1990 of the Arctic Air Facilities Policy. Approval of the policy has yet to be given.

#### **Plans 1984-85**

Arrangements have been made for the official opening of the Liard Highway in June 1984. Work will continue on the Dempster Highway, Mackenzie Highway and the Carcross-Skagway Road and will commence on the North Canol Road. Proposals for new access roads to promising mineral resource locations will be processed.

Benefit/cost studies in support of an extension of the Mackenzie Highway to Norman Wells and the proposed Inuvik-Tuktoyaktuk road will be conducted.

The transportation requirements of the Cyprus Anvil mine will have to be resolved taking into consideration the impact on the White Pass and Yukon railway and the long term transportation needs of the Yukon Territory.

Cabinet approval of a renewal of the mandate provided by the Arctic Air Facilities Policy will continue to be sought and program implementation will continue once the Policy is approved.

A review will be undertaken of the Northern Resource Roads Program with a view to increasing the levels of federal financial assistance available. A study of cost-sharing/cost recovery for development roads in accordance with the requirements of the Roads Policy will be carried out.

DIAND and the Government of Yukon will carry out a study of a Yukon based regional air carrier.

## **Oil & Gas Management and Major Projects Directorate**

### **Economic Function: General Government Services**

The 1982 Northern Affairs Program reorganization resulted in the amalgamation of responsibility for the management of northern oil and gas project development under the Oil & Gas Management and Major Projects Directorate.

This Directorate is comprised of three divisions: Oil and Gas Policy, Oil and Gas Operations and Project Development.

The Directorate is responsible for the management of oil and gas resources in the Yukon, the Northwest Territories and adjacent offshore through the development and implementation of policies, legislation, plans and procedures designed to encourage and provide for the orderly exploration, development, production and conservation of northern oil and gas resources and through the coordination of the development of major projects in the North to provide an orderly and manageable broadening of the northern economic base of the two territories.

The Oil and Gas Policy and the Oil and Gas Operations Divisions are responsible for providing program and policy liaison with the Canada Oil and Gas Lands Administration (COGLA) and between COGLA and the Territorial Governments; coordinating input required under the Canada Oil and Gas Act relating to socio-economic and environmental conditions; direct on-going consultative processes with the oil and gas industries and other interested parties in relation to northern resource development.

The Directorate is also responsible for the management and administration of the Norman Wells oil field under the 1944 Proven Area Agreement. The field produces some 1,000,000 barrels of oil per year to supply petroleum products consumed entirely by residents in the Western Arctic. Upon completion of the pipeline currently under construction and with enhanced productive capacity, the field will deliver some 25,000 barrels of oil per day to southern markets in mid-1985. The refinery for local products will continue in operation.

## *Project Development Division*

### **Responsibilities**

The Project Development Division coordinates government activities related to the planning, assessment, implementation and monitoring of major northern non-renewable resource development projects, to facilitate the development of major projects in the North.

### **Review 1983-84**

The Division coordinated the government's assessment of two industrial proposals for development on the Yukon's North Slope. Gulf Canada Resources Inc. applied to the Department for permission to construct a facility at Stokes Point to provide services to support their hydrocarbon exploration program in the Beaufort Sea. Peter Kiewit Sons' Co. Ltd. requested permission to develop a quarry and port near King Point to supply rock to construct artificial islands for hydrocarbon exploration and development in the Canadian and American Beaufort. Both proposals were rejected, for the time being, by the Minister of Indian Affairs and Northern Development on November 7, 1983 so as not to jeopardize progress on unsettled land claims.

Early in 1984, Panarctic Oils Ltd. applied to government to produce modest quantities of oil from the Bent Horn oil pool (located on the southwest sector of Cameron Island, NWT) and deliver it to market once a year during the open water season by ice strengthened tankers. The Division initiated action to coordinate government activities required to respond to this proposal. In addition, the Division was involved in the coordination of government activities related to:

- a proposal by Borealis Exploration Ltd. to develop an iron ore mine on Melville Peninsula, N.W.T.;
- a proposal by Amax Northwest Mining Company Limited to develop its Mactung Mine - a tungsten deposit on the N.W.T. - Yukon border; and
- the Slave River Hydro Project located on the N.W.T. - Alberta border.

The Division developed operational procedures to apply to the coordination of the Review and Assessment of Major Projects (the RAMP Process). The Process

governs the coordination of the activities of government which are needed to assess and implement industrial development projects in the North and to provide an effective framework for policy input to the assessment and implementation of such projects.

### **Plans 1984-85**

Assessment and coordinating activity with respect to current and future northern project proposals will continue. For example, it is expected that Polar Gas Ltd. will file applications with the Department and the National Energy Board in June, 1984 requesting approval to construct a pipeline for the transport of natural gas from the Mackenzie Delta, N.W.T. to southern markets.

### *Senior Advisory and Review Board Secretariat*

### **Responsibilities**

The Secretariat oversees the implementation of the government's northern hydrocarbon development strategy and coordinates the Northern Oil and Gas Action Program (NOGAP). The two elements of the northern hydrocarbon development strategy announced by the federal government in 1982 are as follows:

- northern hydrocarbon production, when it occurs, will be allowed to proceed in a phased manner by initially developing proven commercial reserves on a small-scale demonstration basis, subject to normal regulatory and review processes; and
- socio-economic, environmental and technical planning and research by the federal and territorial governments will be accelerated through a Northern Oil and Gas Action Program (NOGAP) to support policy and regulatory responsibilities and to achieve a state of government preparedness for large-scale northern hydrocarbon production.

### **Review 1983-84**

On February 23, 1984, the federal government announced that it had allocated \$130 million for the Northern Oil and Gas Action Program as the cornerstone of the northern hydrocarbon development strategy. The Program is based on the possible transportation of hydrocarbons by small diameter pipeline up the Mackenzie River Valley or by year-round ice strengthened tankers eastward through the Northwest Passage in the early 1990's.

### **Plans 1984-85**

In the first year of the seven year Northern Oil and Gas Action Program, the Secretariat will implement measures to coordinate the accelerated planning and research activities of the six federal departments and two territorial governments which are participating in the Program in 1984-85. Participants will commence specific environmental, socio-economic and technical planning and research activities under the Program as the resources to do so are approved by the Treasury Board of Canada within the allocations provided by the federal government for this purpose.

### **Northern Resources and Economic Planning Branch**

#### *Northern Economic Planning Directorate*

### **Economic Function: General Government Services**

The Directorate is composed of three Divisions - the Energy Planning Division, the Socio-Economic Agreements and Native Economy Division and the Economic Strategy Division.

### **Responsibilities**

The Northern Economic Planning Directorate is responsible for the development, implementation and coordination of economic policies, programs and legislation in support of northern economic development, the formulation, negotiation and implementation of Economic Development Agreements with the territorial governments and the promotion of native economic development; the analysis, monitoring and coordination of the economic development process in the North; and the formulation of northern energy policies and programs, including the efficient use of energy resources.

## *Northern Energy Planning Division*

### **Responsibilities**

The Northern Energy Planning Division provides economic and financial advice on conservation, affordability and supply of energy in the North. It facilitates federal government regulatory approvals for the Northern Canada Power Commission (NCPC) and provides advice to the Minister on this Crown Corporation which is the major generator of electrical energy in Yukon and the Northwest Territories. In cooperation with the territorial governments, the Division administers federally financed energy subsidies to residents and small businesses located outside the territorial capitals of Whitehorse and Yellowknife, undertakes research, and develops policy options in conjunction with other federal government departments and agencies, on matters relating to the provision of energy North of 60°.

### **Review 1983-84**

At the direction of the Minister, NCPC complied with the Administered Prices Policy of the federal government and limited its annual rate increase to 6%. Following review of options on the future role and mandate of NCPC, the federal government announced that the NCPC would continue to operate as a federal Crown Corporation utility in the North. Steps were taken to improve NCPC's rate setting practices by requesting the National Energy Board to review and institute a system of rates on rate base - rate of return method. To improve NCPC's responsiveness to northern needs, the federal government also decided to relocate NCPC's corporate office from Edmonton to Yellowknife and to increase the number of NCPC members from five to seven.

Steps will be taken to enhance the efficiency and accountability of the corporation. Direct energy subsidies to Northerners for the Federal Power Support Program, the Commercial Power Rate Relief Program and the Home Heating Oil Subsidy Program were continued in 1983/84 and approval from Cabinet was obtained to extend the three programs through 1984/85. Options for hydro site investigation funding were examined and studies on gas distribution in Yukon and NWT were developed with the Territorial Government and the Department of Energy, Mines and Resources. Various alternatives to the direct energy subsidies were analyzed. The Division cooperated with NCPC and Energy, Mines and Resources in analyzing small hydro proposals for study under the Remote Community Demonstration Program.

### **Plans 1984-85**

The Division will expedite the implementation of decisions regarding the future role and mandate of NCPC including the relocation of the corporate head office to Yellowknife, the development of cost-based electricity rates following National Energy Board hearings in the North, as well as analysis and coordination of changes to the direct energy subsidy programs. It will prepare: draft legislation to amend the NCPC Act, proposals for the management of NCPC's debt, and a process of regulation of NCPC rates in the public domain. The Division will also carry out economic research on programs to promote long term energy conservation and alternative energy supply in Yukon and the Northwest Territories, continue to support in the selection of feasible renewable energy projects, and facilitate the federal government approval process for operating matters of the NCPC.

### *Native Economy and Socio-economic Agreements Division*

### **Responsibilities**

The Division develops policies and plans to provide maximum socio-economic benefits to all northern residents from economic development activity, by analysing proposed programs and projects, and developing and implementing mechanisms and procedures to ensure adequate consultation and involvement with northerners, creating opportunities for training, employment and local business development, and the minimizing of any adverse impacts. Special attention is paid to the needs of native residents.

### **Review 1983-84**

The Division worked with territorial government officials, other federal officials and petroleum company representatives to complete the renegotiation of the northern benefits components for the Canada Benefits packages required under the Canada Oil and Gas Act (1982) and administered by the Canada Oil and Gas Lands Administration. Two regionally based Northern Benefits Committees were set up to facilitate and coordinate effective and timely regional input into the Canada Benefits plans. Extensive consultations and negotiations were undertaken with federal and NWT government officials leading to the signing, under the Economic Development Agreement (EDA) between Canada and the Northwest Territories, of three subsidiary agreements on human resource, natural resource and domestic market (tourism and small business) development. In Program funding over four years, 90% funded by the Federal Government and 10% by the Territorial Government will be \$21 million. The NWT EDA is now fully operational with funds being provided to proponents for various economic development projects in the Territories. Under the coordination and direction of DIAND, much of the preparatory work for the Canada/Yukon EDA has been completed. The Agreement is supported by a Yukon Economic Development Perspective prepared in consultation with other federal government departments, Yukon Government officials and the Council for Yukon Indians. Subsidiary Agreements on Mineral Resource Development, Economic Development Planning, Renewable Resource Development and Small Business and Tourism are proposed for the Yukon EDA over a five-year period.

Numerous activities related to the development of the native economy were undertaken including the collection and review of northern native income and economic development data, the review and analysis of the economic structures elements of land claim settlement proposals in support of the federal negotiating teams, and the management of the financial assistance program for Northern Inuit Co-Operatives. Increasing attention was given to the problems faced by native development corporations and native businesses seeking to establish themselves in the North.

### **Plans 1984-85**

The Division will assist the Northern Benefits Committees to monitor and revise the implementation of the Canada Benefits packages in the North as well as explore more effective techniques for ensuring that northern benefits from non-renewable resource development activities are increased. Planning activities related to major northern development projects will continue. Participation in the implementation of the NWT EDA will continue including the annual effectiveness review and the consideration of new subsidiary agreements. Implementation of the Yukon EDA is expected this year. There will be continued involvement in the planning and policy development activities related to native economic development with increased emphasis on the development of policies and programs which will afford a more coordinated approach in support of northern native economic development institutions. Effective this fiscal year, the Division will assume responsibility for the management of the direct loan, loan guarantee and contribution components of the Inuit Economic Development Program.

### *Economic Strategy Division*

#### **Responsibilities**

The Economic Strategy Division has the following functions: to develop broad economic policies and strategies for northern economic development; to develop regional and sectoral economic policies for the two territories; to conduct special economic studies; and to develop and maintain a comprehensive, computerized data base for the northern territories. The Division works closely with the two territorial governments, northern interests groups and federal departments and agencies which are active in the North.

### **Review 1983-84**

In connection with the federal-territorial economic development agreement process, the Division completed drafting of a Yukon Territorial Perspective, and began drafting a similar perspective of the Northwest Territories. It also began work on a broad review of the northern economy and an economic strategy appropriate to the 1980s, prepared a publication on suggested guidelines for Beaufort oil and gas development, worked on a study of the requirement for macro-economic modelling within the Branch, and studied the question of the subsidization of the northern economy. As a priority, work was begun on the development of a comprehensive northern information base.

The Division also initiated a Northern Food Cost Study, studied the implications of the options of building townships near mineral resources vis-à-vis the provision of infrastructure for fly-in/fly-out operations and assisted in the development of program material for a future Yukon Economic Development Agreement.

### **Plans 1984-85**

Primary tasks will include:

Completion of a northern economic strategy and background paper; continue monitoring the economies of the Yukon and Northwest Territories; completion of a comprehensive study of northern food costs; work toward the development of a data system; completion of a number of economic studies and provision of information, analyses and advice within the Northern Program with respect to northern economic issues.

### **Canada Oil and Gas Lands Administration (COGLA)**

### **Economic Function: General Government Services**

COGLA administers and regulates petroleum activity on the Canada Lands. This area encompasses 6.4 million square kilometres in the Yukon, the Northwest Territories and other areas north of 60 degrees latitude, which are under the jurisdiction of the Minister of Indian Affairs and Northern Development, as well as another 3.8 million square kilometres off the East and West Coasts, under the jurisdiction of the Minister of Energy, Mines and Resources. COGLA's authority comes from two statutes: The Canada Oil and Gas

Act, which provides it with broad regulatory authority on the Canada Lands; and the Oil and Gas Production and Conservation Act of 1979, which gives it authority to regulate drilling and other exploration operations.

At headquarters in Ottawa, COGLA is divided into six branches, which have administrative, regulatory and policy responsibilities in virtually every area of hydrocarbon activity. These branches include the Land Management Branch, the Resource Evaluation Branch, the Environmental Protection and Engineering Branches, the Canada Benefits Branch and the Policy Analysis and Coordination Branch.

In addition, COGLA's regional offices in St. John's, Halifax and Yellowknife and the branches receive input and support from other federal government departments that also have regulatory responsibilities in the offshore. These include the Canadian Coast Guard on marine matters, Environment, and Fisheries and Oceans on environmental concerns, the Canada Employment and Immigration Commission with respect to employment considerations, and the Department of Regional and Industrial Expansion for matters pertaining to the development of industrial strategy.

### **Review 1983-84**

COGLA negotiated 36 exploration agreements with petroleum companies in the North. The companies committed themselves to drilling up to 45 wells over the period covered by the agreements, which generally last from one to five years. Total estimated value of these drilling programs is more than \$2.5 billion.

### *Mainland Region*

Esso Resources Canada Limited continued work on its Norman Wells Oilfield Expansion Project, which began in 1982. Fifty-seven wells were drilled and four of six artificial islands to be constructed in the Mackenzie River were completed.

Administration of design approvals on the Norman Wells project is COGLA's responsibility. In 1983, COGLA carried out surveillance of the drilling, production and construction operations, which included regular on-site drilling and safety inspections. Production facilities related to the existing refinery and the proposed central processing facility were also inspected. All production and injection wells and testing procedures for the pipeline gathering system were checked.

Twenty-seven exploration agreements were concluded in the Mainland Region. Under these agreements, which have terms ranging from one to five years, petroleum companies committed themselves to drill up to 30 wells. Total costs associated with these drilling programs are expected to be in the range of \$230 million.

Aside from development drilling at Norman Wells, three wells were drilled in the Mainland Region. All were dry and abandoned in 1982 - 83 winter drilling season. A fourth well was spudded late in the year.

Most drilling in the Mainland Region resulted in short-term employment opportunities for residents of nearby areas. More than one third of the 275 jobs created by these drilling programs were filled by northern residents. The Norman Wells project created job opportunities for more than 1,000 residents of the Yukon and the Northwest Territories. Approximately \$64 million has been invested to date as a result of contracts signed between Esso Resources Canada Limited and Interprovincial Pipeline (NW) Ltd.

### *Mackenzie Delta-Beaufort Sea Region*

Eight exploration agreements were concluded. In the Beaufort, operators committed themselves to drill up to 15 wells. Total costs associated with these drilling programs over the periods of the agreements are expected to be approximately \$2.3 billion.

Twelve exploratory wells were either spudded or re-entered. Four drillships, three artificial island-based drilling rigs, one conical drilling unit and one land-based rig were active in this region. Because of increasing drilling activity, COGLA opened an inspection office in Inuvik with two fulltime inspectors who are responsible for both offshore sites and land rigs. The activities of this office will supplement those of COGLA's office in Yellowknife.

Drilling operations created 2,000 job openings for Canadians, over 620 of which were recruited from 30 northern communities. Almost 100 per cent of the Beaufort Sea workforce is Canadian.

Formal training programs to enable northerners to assume positions in the petroleum industry continued. Some of this training consists of Canadians working on the job with non-Canadians to enable the former to eventually assume relatively senior positions within drilling programs.

Total operating expenditures of drilling programs in the region was approximately \$658 million. Almost \$480 million (73 per cent) was spent purchasing Canadian goods and services. Over 10 per cent of the Canadian expenditures were made in the Mackenzie Delta-Beaufort region.

### *Arctic Islands*

No exploration agreements were concluded, because exploration over the next five years was covered in 21 agreements concluded in 1982 with Panarctic Oils Ltd., the operator in the area. Five wells were completed in 1983.

Operators spent a total of \$74 million in seismic and drilling expenditures in 1983, \$58 million of which was spent on Canadian goods and services. Approximately four per cent was spent in the region.

During the seven-month season, there was a monthly peak of 237 jobs, of which 47 were filled by Inuit hired from the communities of Pond Inlet and Arctic Bay. The remaining 190 were filled by Canadians recruited throughout the country.

### *Hudson Bay*

In 1983, more than 8,000 kilometres of seismic were shot, creating a total of 34 jobs on seismic vessels. Twenty positions were filled by Canadians and 14 by non-Canadians. Native persons from the region were hired as environmental observers. Canadian Occidental initiated an extensive environmental overview of the Hudson Bay region. Total spending relating to the seismic activity was \$7 million, of which approximately 35 per cent accrued directly to Canada. Support services for the seismic program, such as crew transfer and emergency evacuation, were again provided using helicopters based at Churchill. In May, 1983, the Ministers of Energy, Mines and Resources and of Indian Affairs and Northern Development, approved the establishment of a Hudson Bay Oil and Gas Committee to represent residents of the region who may be affected by hydrocarbons exploration activities.

### **Administration Program**

#### **Technical Services and Contracts Branch**

### **Economic Function: General Government Services**

#### **Responsibilities**

The Branch is responsible for providing professional and technical expertise in the planning, design, procurement, technical operation and maintenance of real property and other departmental assets, and for contracting. The Branch develops related policies, standards, guidelines, systems and training packages.

#### **Review 1983-84**

The Transportation Division provided engineering, project management and general engineering support services in the planning, design and implementation of northern highways, with design and construction services provided by Public Works Canada and the Territorial Governments under the Engineering Services Agreements.

On the Liard Highway all the remaining bridges have been constructed and the highway is scheduled to be officially opened on June 23, 1984.

Work was started on the reconstruction and paving of the Mackenzie Highway from Km. 0 (Alberta-N.W.T. border) and is expected to be completed to Km. 84 (Enterprise, N.W.T.) in 1987.

Preparatory work is underway to compete the subgrade and surfacing of the Mackenzie Highway between Fort Simpson and Wrigley. This section is expected to be completed in 4 years, provided that Treasury Board approval is obtained.

The reconstruction of the Dempster Highway from Km. 0 - 125 was started. Grade strengthening and surfacing was carried out in several locations from Km. 125 to Km. 460.

The upgrading of the Carcross-Skagway Road between Carcross (Km. 106) and the Alaska Highway (Km. 159) began this year and is expected to be completed by 1986.

The Hyland River Bridge on the Nahanni Range Road in the Yukon was completed. Design and development studies for the North Canol Road continued for the second year of the 3 year program.

The Building Division, in support of the National Energy Program, continued a program to monitor the performance of two staff houses in Frobisher Bay with regard to the application of new technology and energy conservation.

The Buildings Division staff is participating with other government departments, provincial and territorial governments, agencies and private industry in developing a new energy-efficient residential construction standard for the North. A draft of the standard was completed and is now available. Future work will involve an introduction of the standard to those concerned with housing in the North and the preparation of interpretation documents. Recommendations, drawings, and estimates were made to permit upgrading facilities at Baker Lake, Sarcpa, Rankin Inlet and Resolute Bay.

A project management service was provided for the three district office buildings for the Northern Program. The first, at Yellowknife, is expected to be completed by the end of March 1984; for the second, at Fort Smith, construction is expected to start in May 1984 and be completed by November; the third, at Frobisher Bay, is at the design stage for construction in 1985. The design and construction agency for these offices is Public Works Canada.

The Municipal Services Division carried out inspections of an existing electrical installation at the summer research station at Sarcpa Lake.

Maintenance Management Systems development was started in both the Yukon and N.W.T. Regions in 1983/84 with assistance from the Technological Development Division. In addition, the Branch and N.W.T. Region entered into discussions with a number of departments operating in the North, to develop a common services process for the more efficient servicing and repair of federal facilities.

The Terrain Information Section of Technical Data Services continued to provide technical services and advice to the Northern Program (at HQ and in the Regions) and to Territorial Governments in the activities of air and ground surveys, topographical and photomapping and various photogrammetric requirements.

The work done by the section comprised the analysis of the yearly work program needs, preparation of cost estimates, carrying out the research, evaluation and development of existing data base and preparation of technical specifications required for contract documents. The section also participated in interdepartmental air and ground survey committees.

To complement the contract work, in-house resources were used to produce air photos mosaics, topographical drafting, thematic maps and indices.

#### **Plans 1984-85**

Construction work will continue on Dempster Highway, Carcross-Skagway Road and Mackenzie Highway. Reconstruction on the Canol Road will begin subject to approval to proceed.

The evaluation of energy conservation technology for application to northern energy efficient house design, construction and retrofit will continue. Construction of district office buildings in Fort Smith is expected to start in May 1984. The design phase for a new district office building at Frobisher Bay will begin.

The Technical Services and Contracts Branch and N.W.T. will continue discussions with a number of departments that operate in the North to develop a common services process for the more efficient servicing and repair of federal facilities.

## **Indian and Inuit Affairs Program**

### **Responsibilities**

The Indian and Inuit Affairs Program helps Indians and Inuit in the Yukon Territory and Northwest Territories to achieve their cultural, social and economic goals. The Program works in co-operation with native groups and the Territorial Governments.

### **Housing and Band Support**

## **Economic Function: Education**

### *Headquarters*

### **Review 1983-84**

A total of \$105,000 was allocated in the Yukon Territory and \$76,560 in the Northwest Territories during the 1983-84 fiscal year for the Band Training Program.

In the Northwest Territories, band training initiatives were directed primarily to Band managers. Workshops were held in management, housing, training and financial programs.

The Yukon Region developed a comprehensive training program related to various aspects of housing.

The Band Training and Advisory Services Directorate (BTAS) concluded its assistance to the Council for Yukon relating to the development of a native broadcasting system in the Yukon. The directorate provided \$10,000.00 for the development and training of radio operators, technicians and programmers for the anticipated northern native broadcasting system. Funding was provided for the development and delivery of an administrative skills course. Special projects in the N.W.T. included a Distance Education project in Aklavik and Snowdrift and a project to provide training skills to individuals to enable them to teach others these administrative techniques.

### **Plans 1984-85**

The Indian Management Development Program, formerly the Band Training and Advisory Services Directorate, will continue to assist Indian Band Councils and staff to assess management development requirements and to develop and implement strategies and plans to meet these requirements.

## **Resource, Economic and Employment Development Branch (REED)**

### **Review 1983-84**

## **Economic Function: Economic Development - Other**

### *Resource Development Impacts*

The Resource Development Impacts (RDI) Directorate was established in 1981-82 to respond to the concerns of Indian people about major resource development. In 1982-83 Indian bands in the Yukon, British Columbia and Northwest Territories were provided with funding to enable them to deal more effectively with the impacts of major resource development. In 1983-84 due to a temporary lapse of authority and funding, RDI operations were severely curtailed, and only two northern projects were funded.

In the Yukon, the Directorate provided financial assistance and technical advice to the Ross River Band regarding the impact of proposed Canada Tungsten mining in MacMillan Pass, and to allow continuation of the 50% cost-sharing arrangement with the proponent, of a comprehensive socio-economic impact study initiated in 1982-83. The Ross River Band has secured trucking contracts and tentative training programs with the Yukon Barite Mine and Mill operation.

In the Northwest Territories the Directorate provided technical assistance to the Dene Nation, and to Dene communities in the Mackenzie Delta and along the Mackenzie River to deal with the impacts of the Beaufort Sea Hydro developments and the Norman Wells pipeline construction. Financial assistance was provided for studies of the proposed Slave River Hydro development.

### **Plans 1984-85**

Authority and funding having been reinstated, the Resource Development Impacts Directorate will assist Indian communities which will be affected by resource developments.

### *Economic Institutions*

In 1983/84, Economic Institutions funded the Yukon Indian Development Corporation (YIDC). The YIDC is an organization established to administer and invest that portion of land claims settlement funds identified for economic development purposes. Pre-land claims settlement funding has been provided to the YIDC to ensure effective use of Claims Settlement Funds when these become available.

### **Regional Offices**

#### *Yukon Region*

#### **Responsibilities**

The Yukon Region of the Indian and Inuit Affairs Program carries out administrative functions for approximately 3,400 status Indians from 13 Bands in the Yukon and 3 in northern British Columbia. The program is designed to help Indian people to achieve their cultural, social and economic goals and to ensure that Canada's constitutional and statutory obligations are fulfilled.

Resource, Economic and Employment Development

#### **Review 1983-84**

The Resource, Economic and Employment Program provided loans, contributions and advisory services to assist Yukon Indians in business development and job creation.

The program contributed \$55,695 in business assistance to individuals and companies and \$307,500 for institutional development, training programs and traditional pursuits.

A sub-regional economic development plan for three Northern Bands was co-funded by Department of Regional Industrial Expansion (DRIE) and Resource, Economic and Employment Development. Phase 1 of the economic plan has been completed, and Phase 11 is in process.

The Ross River Indian Band completed a Resource Development Impacts study.

A forest fire suppression course was sponsored by the Council for Yukon Indians (CYI) and jointly funded with Canada Employment and Immigration Commission (CEIC) and the Forestry Division of DIAND's Northern Program. The course was attended by six members from each of the four participating Bands.

The occupational skills training and adult education programs were transferred from the Education Program. About 20 students were assisted.

### **Plans 1984-85**

The Resource Economic and Employment Development Program will continue to provide financial assistance and advisory services in training, planning and business development. The Loan Improvement Process will continue. The Sub-regional economic development plan is expected to be completed by the end of the first quarter.

### **Social Development**

## **Economic Function: Economic Development - Human**

### **Review 1983-84**

High levels of expenditure continued in the Income Maintenance program as a result of continuing severe economic conditions in Band communities and throughout Yukon generally.

The Social Development Program continued to support the activities and increased involvement of Yukon Indians in the Child Welfare system and in Government of Yukon plans to review and amend the Child Welfare Act.

Through involvement in various governmental committees and study groups, the department provided input into defining and structuring services in Yukon to meet the needs of the elderly status Indian population.

Through the establishment of increased and more effective communication links with the Council of Yukon Indians, the Program undertook to identify issues and encourage co-operative planning for the eventual implementation of a Yukon Indian Land Claims settlement. Related consultation with the Government of Yukon began.

### **Plans 1984-85**

The Social Development program will support and encourage increased training activities for Band Social Development staff through consultation with the Council for Yukon Indians and the Government of Yukon.

Planning related to social welfare needs arising from the anticipated settlement of Land Claims will be emphasized.

## Education Program

### Economic Function: Education

#### **Review 1983-84**

Elementary and secondary education programs are the responsibility of the Yukon Government. However, DIAND is directly involved in post-secondary and adult education programs.

The program sponsored 30 full-time and 21 part-time students thus allowing them to attend colleges and universities. This number represents an increase of almost 50 over the previous year. The contribution agreement with Council of Yukon Indians included post secondary funds for staff training (8 full time students) and adult education funds.

Yukon Hall, the Region's only student residence, provided accommodation to students from other communities who attend in-school projects in Whitehorse. In addition, three group homes in outlying communities were funded.

Continuing funding was provided to the Council for Yukon Indians for programs in curriculum development. The pilot project for the Grade 1, Social Studies program was introduced in several Yukon schools.

#### **Plans 1984-85**

The Education Program will transfer responsibility for Adult Education to the Resource, Economic and Employment Development Program but will continue to provide services in post-secondary education and student accommodation. Advice and assistance to bands will be provided to enable improved service delivery under programs transferred to the Band's responsibility.

## Local Government Program

### Economic Function: Local Government

#### **Review 1983-84**

The Yukon Region's Local Government Program made funding available to all fifteen Bands in the Region for locally administered community services. Local Government programs provided funding for band support, fire fighting equipment, water and sanitation facilities, and programs in community planning and recreation. The Program also provided capital funding to Band Councils for the construction of housing and other buildings and for the surveying of land considered suitable for Indian housing.

The Program worked closely with the Bands and the Canada Mortgage and Housing Corporation (CMHC) to provide housing in native communities.

In July 1982, the Federal Treasury Board gave approval in principle for the Kwanlin Dun Band to relocate its Village from the industrial section of Whitehorse to a residential area. The relocation will likely begin in 1984 and be completed by 1987. The site of the present village will become an industrial park.

#### **Plans 1984-85**

Bands will continue to control and manage municipal services. The Program will work to increase Band participation in joint INAC and CMHC housing programs and to provide increased Band staff training.

In view of impending land claims settlements, a Treasury Board submission seeking to accelerate Band planning and training will be prepared.

#### *Northwest Territories*

#### **Responsibilities**

The Regional Office of Indian and Inuit Affairs in Yellowknife consults with 17 band councils, 8,470 Registered Indians, native associations and the Northwest Territories Government to promote the social and economic development of Indian bands.

The Economic Development Program provides advice and financial assistance to enable Native Northerners to communicate with government departments and private organizations involved in economic development in the North.

#### **Review 1983-84**

The amalgamation of Band Councils and Settlement Councils in the Western Arctic, led to the development of a new Community Ordinance. Representatives of the Dene Bands, the Government of Northwest Territories and the Indian Affairs Program are involved in this project.

An Economic Development Task Force, composed of regional representatives of Dene Bands and the Dene Nation was formed. Its task was to formulate Dene policies in relation to Economic Development Agreements, megaprojects and community based economic development.

Core funding and band overhead costs were consolidated under the National Band Support Funding Program. Overall funding was increased by 100%, thus enabling the bands to engage competent staff as well as to provide additional consultation funding on regional and national issues.

#### **Plan 1984-85**

The implementation of a community based training plan will be promoted, particularly for those communities directly affected by the Norman Wells pipeline.

The Economic Development Task Force initiatives, particularly in relation to the Economic Development Agreement and the Native Economic Development Fund, will be supported.

The regional office will participate in the formulation and development of the Community Ordinance Legislation of the Northwest Territories.

# Labour Canada

## Economic Function: General Government Services

### **Responsibilities**

Labour Canada administers the Canada Labour Code and is responsible for maintaining a balanced legislative framework covering industrial relations in the private sector coming under federal jurisdiction. It also establishes minimum standards for wages, working conditions, safety and health and helps to resolve problems facing individuals or groups in these areas. Labour Canada works to minimize and resolve labour-related conflict within the Department's legislative framework.

Employees or employers engaged in any provincial, national or international work or business fall within Labour Canada's jurisdiction.

Because labour affairs are becoming more and more complex, Labour Canada maintains offices in major centres across the country to make the Department's services more accessible to those who need them. These offices have primary responsibility for implementing departmental programs, while maintaining close liaison with headquarters.

### **Mediation and Conciliation Services**

The Mediation and Conciliation Branch, provides third-party assistance in private-sector labour/management disputes.

The Branch also provides preventive mediation assistance to management and labour during the term of a collective agreement, as well as advisory services in other types of industrial relations problems.

### **Review 1983-84**

During the fiscal year, 16 collective bargaining disputes affecting territorial employees were handled by the Service. Of this total, 13 disputes including 2 involving work stoppages were pursued to a satisfactory conclusion, through conciliation or post-conciliation negotiations. Three disputes were pending at fiscal year-end. The disputes involved companies engaged in mining, road and water transportation, construction, municipal services and food services.

### **Plans 1984-85**

Normal planning to meet responsibilities.

### *Arbitration Services*

The Branch assists in resolving private sector labour/management disputes arising from the interpretation, application, administration or alleged violation of collective labour agreement provisions.

### **Review 1983-84**

During fiscal year 1983-84, Arbitration Services received six applications from parties in the North for appointment of either arbitrators or arbitration board chairmen. Two arbitrators and two arbitration board chairmen were appointed. One case was pending as of March 31, 1984, and in the remaining case it was not appropriate for the Minister to make an appointment.

### **Plans 1984-85**

Normal planning to meet responsibilities.

### **Employment Relations and Conditions of Work Branch**

#### *Labour Education Program (LEP)*

Labour Canada's Financial Assistance Program provides financial support to legally constituted union organizations in Canada to develop and or conduct educational activities to train existing and potential union leaders.

### **Review 1983-84**

The Northwest Territories Teachers' Association, representing 758 members, received a labour education grant of \$1,084.00. The grant was applied to a two-day conference the objective being to familiarize the regional presidents with the structure of the association, grievance procedures, consultation techniques and collective bargaining.

### **Plans 1984-85**

Normal planning to meet responsibilities.

### **Quality of Working Life (QWL) Program**

The Quality of Working Life Program encourages Canadian organizations to promote innovative practices in response to changing economic and social conditions in the workplace. Program goals include increasing employee work satisfaction, making better use of human resources and improving relations between labour and management.

Major program thrusts are concerned with changing traditional values and attitudes of senior company and union officials, developing resources and establishing structures that are supportive of program objectives.

There were no QWL activities specifically relating to Canada's north in 1983-84.

### **Plans 1984-85**

Normal planning to meet responsibilities.

### **Mountain Region**

The following is a summary of the activities of the Whitehorse Office of Labour Canada, Mountain Region, in the North (Yukon Territory and Northwest Territories). This report will deal with the administration of Part III and Part IV of the Canada Labour Code, Treasury Board Occupational Safety Policies, standards and guidelines in the Federal Public Service and the Fair Wages and Hours of Labour Act during the 1983-84 fiscal year.

A Labour Canada office has been in operation in Whitehorse, Y.T. since August 2, 1978. Staffed by a Labour Affairs Officer, with clerical assistance, it is designed to serve both Yukon and Northwest Territories. A Zenith toll free line between Whitehorse and six major N.W.T. communities expedites service in the area. Staff from the Vancouver and Edmonton Offices will supplement services as required.

## Federal Contracts

### a) Inspections on Government Contracts (Fair Wages and Hours of Labour Act);

During the fiscal year, 17 complaint inspections were carried out by the Labour Affairs Officer from Whitehorse, (of these 1 was made in the Northwest Territories and 16 in the Yukon Territory). Wage adjustments were collected from 3 contractors as a result of these inspections; violations were corrected, and the sum of \$8,056.99 was recovered for 12 employees in the Northwest Territories and \$1,715.45 for 1 employee in the Yukon Territory.

### b) Wage Schedules Issued:

	Northwest Territories	Yukon Territory
Construction Contracts	71	68
Service Contracts	Nil	Nil

### Part III - Canada Labour Code (Labour Standards)

Provisions of Part III of the Canada Labour Code do not apply to a work undertaking or business of a local or private nature in the Yukon or the Northwest Territories but only to those businesses or undertakings that normally come under federal jurisdiction as in the provinces.

During the 1983-84 fiscal year 63 complaints were investigated under Part III of the Code. Twenty were in the Yukon Territory and 43 in the Northwest Territories. As a result of these investigations, the sum of \$240.00 was recovered for 1 employee in the Yukon Territory, and \$15,632.44 for 22 employees in the Northwest Territories. In the same period four routine inspections were carried out in the Northwest Territories, and three in the Yukon Territory.

### Part IV of the Canada Labour Code (Safety of Employees)

The long term objective in the Territories is the implementation of a comprehensive employment safety program covering employees subject to Part IV of the Canada Labour Code. This also applies to employees of the Public Service of Canada who are covered by the Treasury Board Occupational Health and Safety Policy. Under Part IV, the Department is responsible for ensuring that employers maintain safe and healthy working environments in federal works, undertakings and businesses. In the Federal Public Service, the Department acts as an agent of Treasury Board in assisting in the development and improvement of safety programs, and monitors existing programs in accordance with the Occupational Health and Safety policies of Treasury Board.

### Summary of Activities - Yukon Territory & Northwest Territories

During the 1983-84 fiscal year, 66 safety cases involving complaints, counselling, inspections, surveys, safety audit program, development and accident investigations, were undertaken in the Yukon and the Northwest Territories. The following industries, companies, crown corporations or departments were covered:

- 1) Banks
- 2) Highway Transport
- 3) Telephone Industry (Northwest Telecommunications)
- 4) Northern Canada Power Commission
- 5) Canada Post Corporation
- 6) Parks Canada
- 7) Airlines
- 8) Transport Canada
- 9) Shipping Northern Transportation
- 10) Indian and Northern Affairs
- 11) Health and Welfare
- 12) Fresh Water Fishing Corporation

During the 1983 fiscal year, the Labour Affairs Officer from Whitehorse made three service trips to the Northwest Territories to 12 communities, travelling a total of 7,240 miles.

During Sept. 13-14/83 a labour standards - safety seminar was held in Whitehorse, Y.T. at the Northern Conference of International Brotherhood of Electrical Workers attended by 30 delegates.

On March 27-28-29/84 a safety presentation was given to the Transport Canada Airworthiness Seminar and the 7th annual meeting of the Northern Air Transport Association held in Whitehorse, Y.T.

Formal agreements with the Yukon and Northwest Territories Governments were renewed in 1984 whereby they will conduct on behalf of Labour Canada technical inspections of boilers, pressure vessels and elevating devices in federal buildings. During the year 1983-84 inspections done on our behalf included:

Boilers and Pressure Vessels	203
Electrical	13
Elevating Devices	Nil

### Accident Compensation

Total claims processed in the Northwest Territories to the end of March, 1984, totalled 312 and in Yukon, 163.

### Plans 1984-85

For the fiscal year 1984-85, the priorities will include safety inspections and accident investigations in both the private sector under federal jurisdiction, and in the public sector of federal government departments and crown agencies.

### **Labour Data Branch**

The Labour Data Branch carries out an annual survey of wages, salaries and conditions of work in establishments with 20 or more employees. The October 1, 1983 survey included 43 establishments in Yukon and 57 in the Northwest Territories. The survey will be carried out again in 1984.

Information on work stoppages due to strikes and lockouts in the two territories is maintained on a continuing basis. In 1983, two work stoppages were reported.

The Branch maintains a file of collective agreements, which included 39 agreements covering some 7,890 employees in the Territories.

### **Plans 1983-84**

Normal planning to meet responsibilities.

### ***Legislative Analysis and Research Division***

The Legislative Analysis and Research Division collects and analyses legislation affecting employer-employee relations and physical working conditions. Through its publications, the Division reports legislative developments pertaining to occupational safety and health, workers' compensation and employment standards adopted in Yukon and the Northwest Territories as well as federal legislation applicable in the Territories. The Division also prepares an annual report for the Canadian Association of Administrators of Labour Legislation (CAALL), an organization that brings together representatives of the federal and provincial departments of labour and representatives from both Territories. Finally, upon request, the Division provides Government officials, organizations and individuals in the Territories with information on the labour legislation in the various jurisdictions.

### **Plans 1984-85**

Normal planning to meet responsibilities.

### ***Industrial Relations Information Service (IRIS)***

IRIS is a service intended primarily for those involved in labour relations and collective bargaining. It is a "one-step" information service for parties on both sides of the bargaining table and provided prompt answers to questions on industrial relations.

IRIS is available to individuals and organizations in the Yukon and Northwest Territories. They may either call (819) 997-3117 (collect calls are accepted) or write to the following address:

Industrial Relations Information Service  
Labour Canada  
Ottawa, Ontario  
K1A 0J2

### ***International Relations Division***

The International Relations Division has the lead responsibility in matters relating to Canada's participation in the International Labour Organizations (ILO). Among the Organization's principal activities is the monitoring of international labour standards resulting from ILO's Conventions and Recommendations.

Given Canada's jurisdictional framework with respect to labour affairs, a long-standing practice has been to consult with provincial and territorial authorities on these standards. These consultations are carried out on an on-going basis, and culminate in an Annual Meeting of Deputy Ministers on ILO matters. Senior labour administration officials from the Yukon and the Northwest Territories are also invited to attend and to provide input.

### **Plans 1984-85**

Normal planning to meet responsibilities.

# National Defence

## Economic Function: Defence

### **Responsibilities**

The Department of National Defence safeguards the sovereignty and independence of Canada. In the North, the Department protects Canada against threats and challenges to its territorial integrity, including the Canadian territorial sea and airspace. It contributes to collective security arrangements with its allies in North America and NATO.

DND supplements and supports civil departments and agencies of government in discharging their responsibilities in the North, while participating in the promotion of national development aims. Additionally, DND provides a large measure of the means necessary for reinforcing Canada's jurisdiction in the area, under national and international law.

### **Review of Activities - 1983-84**

### **Personnel**

Canadian Forces teams from Vancouver, Edmonton, Winnipeg, Montreal and St. John's conducted briefings on career opportunities in the Canadian Forces and made themselves available for interviews in fifteen northern and Labrador Coast communities. Since last year, 24 applicants have been, or will soon be, processed for enrolment and three have been enrolled. The reduction in this year's enrolments is largely due to a restriction imposed on northern recruiting. This restriction followed the accumulation of evidence that neither the Forces nor the native people were deriving maximum benefit from the Northern Peoples Development Program (NPDP). A review is currently under way to determine methods for improving the program.

The native cultural awareness training which was initiated last year has received formal endorsement as a Canadian Forces course. The course will now be conducted annually so that eventually all those military personnel who regularly encounter native peoples will benefit.

Due to a current lack of employment opportunities in the North, the seven month aircraft mechanics course for northern natives, conducted annually at Canadian Forces Base Borden, was cancelled for this year.

### **Maritime Forces**

Aurora aircraft flew approximately 400 hours on Northern Patrols (NORPATS) in the arctic. The NORPATS normally operate out of Frobisher Bay and Yellowknife. In addition to fulfilling their primary role of sovereignty surveillance, these patrols support the individual requirements of various government agencies. During the ice season, Transport Canada observers were carried on the patrols for ice reconnaissance. Other tasks included: photography for the Department of Indian Affairs and Northern Development and for the Department of Fisheries and Oceans; the investigation of offshore oil exploration and drilling activity on the archipelago; and the reporting of population movements. Scientists and observers from other government departments were also carried, conducting such activities as the investigation of seabird and marine populations in the Beaufort Sea.

During the summer of 1983 two Tracker aircraft from 880 Maritime Reconnaissance Squadron based at Summerside, PEI, spent seven days flying training missions in the Coral Harbour, Frobisher Bay and Hall Beach areas. These missions are designed to provide training to Tracker pilots in both northern operations and operations from small gravel strip airfields.

### **Land Forces**

During the past fiscal year, Mobile Command activities were limited to operational reconnaissance by staff officers from the Command Headquarters and commanders and staff officers of the formations which have responsibilities for conducting training and operations in the North. The Mobile Command Arctic Training Plan 1980-85 on which previous exercises were based, is being revised to more closely meet the requirements and capabilities of the Command.

Four adventure training exercises by small groups of soldiers were undertaken, three in the Northwest Territories and one in the Yukon. These exercises are designed to challenge junior leaders under difficult conditions and to expose young soldiers to the arctic environment.

Two long range communications exercises, one in the western and one in the eastern arctic were conducted by southern based signals units using their portable equipment.

### **Air Forces**

Air Transport Group Hercules aircraft provided weekly service flights as well as special flights to support Canadian Forces Stations Inuvik and Alert. Resupply flights to Canadian Forces Station Alert, known as Boxtop operations, were carried out in May, August and November 1983.

Hercules and Buffalo aircraft provided airlift support for land forces exercises in the high arctic. Twin Otter aircraft of 440 Squadron from Edmonton and Yellowknife were utilized for liaison flights throughout the North and assisted in seven search and rescue tasks.

Twin Huey, Kiowa and Chinook helicopters from 10 Tactical Air Group provided 300 hours of airlift in support of improved communications systems in the high arctic. The recovery of a damaged Twin Otter aircraft at Alert required 31 hours of Twin Huey time.

The Distant Early Warning (DEW) Line, consisting of four main sites and seventeen auxiliary sites, continues to provide a military presence and air defence warning capability in the arctic. These installations stretch from Cape Dyer on the East Coast of Baffin Island to Komakuk Beach near the Alaskan Border.

During the period, aircraft and crews from Canadian Forces squadrons flew close to 200 hours on various search and rescue missions across the North. The Canadian Forces air demonstration team, the Snowbirds, provided air shows at Whitehorse, Yellowknife and Inuvik.

### **Military Engineering**

Major construction activity during FY 1983/84 centered on continuation of work on the Headquarters and Personnel Services Building at Canadian Forces Station Alert. This work involved erection of structural steel and siding as well as interior work which included the installation of walls, plumbing, and electrical and heating systems.

During the period mid June to early August, the Mapping and Charting Establishment conducted Operation Arctic 83 on Baffin Island and the islands in the Foxe Basin. This task was necessary to provide sufficient ground control to complete the requirements of the Aerial Survey Data Base covering the area in support of 1:50,000 scale mapping. The operation was conducted from two base camps: initially Pond Inlet for three weeks and then Longstaff Bluff for the balance of the period. Helicopter support was provided by Sealand Helicopters Ltd of St. John's, Newfoundland.

In May 1983, 2 Combat Engineer Regiment assisted in the withdrawal of the Department of Energy, Mines and Resources "Canadian Expedition to survey the Alpha Ridge" (CESAR) base camp. This involved the parachuting in of engineers and heavy equipment to clear snow off the ice landing strip to allow Canadian Forces Hercules aircraft to pick up personnel and equipment.

### **Northern Region Headquarters**

Northern Region encompasses the land and water areas of the Yukon and Northwest Territories. Northern Region Headquarters (NRHQ) is responsible to National Defence Headquarters and its role is "to discharge regional military functions and to assist and facilitate activities of other elements of the Canadian Forces within Northern Region". It serves as a Department of National Defence agency for contact and assistance to the territorial governments and federal government departments in the North.

NRHQ continued to provide liaison, technical advice and logistic assistance for northern exercises mounted by other commands. Two exercises of interest conducted during the period were Exercise Klondike Challenge and Exercise Nanook Lark.

#### *Exercise Klondike Challenge*

Exercise Klondike Challenge was a 30 day adventure training exercise conducted by First Battalion, The Royal Canadian Regiment with attachments from other units of the Special Service Force. The

exercise followed the route taken by the Yukon Field Force in 1898 and involved an arduous overland trek of 400 kilometers from Telegraph Creek, British Columbia to the southern end of Teslin Lake, followed by a 700 kilometer voyage down the Teslin and Yukon Rivers to Dawson City. NRHQ assisted the Royal Canadian Regiment in reconnaissance, in community liaison and by providing a liaison officer. 440 (Transport and Rescue) Squadron Detachment at Yellowknife provided resupply and medical evacuation with a float-equipped Twin Otter Aircraft.

#### *Exercise Nanook Lark*

Exercise Nanook Lark was a long range communications exercise which involved Canadian Forces Communication Command, Government of the Northwest Territories and Northern Region Headquarters. The aim of the exercise was to practice Government of the Northwest Territories emergency plans, establish procedures in the event of civil emergencies and to practice NRHQ response to a request for assistance.

#### *Reserves - The Canadian Rangers*

The Canadian Rangers are a separate component of the Reserves whose role is to provide a military presence in the sparsely settled northern, coastal and isolated areas of Canada which cannot conveniently nor economically be covered by other elements of the Regular or Reserve Forces. There are 680 rangers organized into 12 to 30 man patrols in 36 communities throughout the Northwest Territories, northern Manitoba and Quebec.

NRHQ maintains liaison with all ranger patrols, resupplies each ranger with 200 rounds of ammunition every year and conducts formal ranger training once every three years in map using, communications, first aid, rifle and drill. In 1983 the NRHQ ranger staff conducted exercises in fourteen northern communities.

#### *Cadets*

The cadet movement, a significant youth movement in the North, promotes physical fitness, citizenship and leadership training. Cadet corps and squadrons compete for flying scholarships and recognition in such skills as shooting and drill. In 1983, four cadets within Northern Region earned Gold Stars, the highest achievement level, and five were awarded flying scholarships. There are 18 cadet corps and squadrons in Northern Region, dispersed over a large area including Baffin Island, the Great Slave Lake area, the central arctic and the Yukon Territory. Total strength is 600 cadets and 90 Cadet Instructors List (CIL) officers and civilian instructors.

Cadets from Northern Region attended summer camps across Canada and two cadets participated in the Canadian Forces Europe flyover. The majority attended courses at Cadet Camp Whitehorse in the Yukon, the only cadet camp "North of 60°". This national cadet camp offers training in subjects such as canoeing, mountaineering, bushcraft and visits to historical sites.

The annual "Trail of 98" was completed by 60 top cadets from regions all over Canada. The trek involved hiking through the Chilkoot Pass from Skagway, Alaska to Bennett Lake, British Columbia and travelling 700 kilometers down the Yukon River by boat to Dawson, Yukon.

This past year saw the establishment of a permanent cadet camp 12 kilometers south of Whitehorse. The leasing of the vacated Wolf Creek Correctional Facility and surrounding land from the Yukon Government has enabled construction of a permanent cadet camp.

Construction of sixteen log cabins to be used as cadet quarters, classrooms and dining areas and the renovation of the existing facility commenced in September 1983. The proposed completion date is June 1984 with cadets occupying the camp in early July 1984. The construction activity involves personnel from NRHQ, Canadian Forces Base Edmonton, the New Employment Expansion and Development Program, and Katimavik. The initial facility will provide accommodation for 350 cadets. Long term plans will increase this to 600 cadets.

## Visits

In 1983 NRHQ was visited by numerous groups and individuals. Among them were the Chief of the Defence Staff, foreign service attachés, members of the National Defence College and foreign students attending the Canadian Forces Command and Staff College.

## Research and Development

### Economic Function: Short Range Research

#### Responsibilities

The Research and Development (R&D) Branch formulates and implements departmental scientific policy and controls and manages the R&D program of the department. The Branch is responsible for ensuring the availability of a technology base capable of providing the knowledge and experience necessary to solve scientific and technological problems related to departmental operations and equipment. Research is undertaken on a variety of projects aimed at acquiring knowledge relevant to military operations in the North and the testing and evaluating of equipment and systems proposed for use in arctic or other adverse environments.

#### Review 1983-84

The internal R&D program of the department is conducted in its six research establishments. During 1983/84, five of these establishments were involved, to some degree, in research related to northern activities and a number of research contracts were awarded to Canadian universities and industries in support of this research. In addition, Kingston's Royal Military College Military Engineering Research Group (RMC/MERG) conducts research on problems associated with engineering in a northern environment.

The Defence Research Establishment Pacific (DREP) activities included: a major field trial conducted in April along the northwest coast of Ellesmere Island in cooperation with the CESAR project; a small semi-permanent camp was established on sea ice approximately 8 km from shore at the mouth of Yelverton Bay; small expeditions to Nansen Sound and Yelverton Bay in August to carry out acoustic measurements; small expeditions to Assistance Bay (south Cornwallis Island) in May, June and July to carry out geomagnetic activity measurements; and a field trial conducted in the Barrow Strait/Jones Sound areas in August and September to carry out maintenance of DREP camps. This last field trial was conducted with the support of the CCGS SIR JOHN A. MACDONALD and a team of Canadian Forces divers.

A continuing activity initiated by the Defence Research Establishment Valcartier (DREV) was designed to determine the effects of long-term storage upon the service life of the CRV7 rocket motor in a variety of climatic environments; motors are being stored at Canadian Forces Station Alert as part of the trials. Prototype development has proceeded on a smoke marker for use in military search and rescue operations, and in low altitude parachute extraction system operation in the arctic environment.

In preparation for the TEAL RUBY experiment using an infrared surveillance satellite, infrared surveys of terrain and sea continued in northern Quebec and in the Northwest Territories in the region between the McKenzie River and Great Bear Lake. The surveys are made from an airborne platform operated by the Canada Centre for Remote Sensing of the Department of Energy, Mines and Resources and are supported by ground truthing measurements. One ground expedition has been made at Kuujuaq (Fort Chimo).

Scientists in the Protective Sciences Division of the Defence Research Establishment Ottawa (DREO) are responsible for research on clothing and protective equipment required for use in harsh environments. During the year, research activities continued in basic studies of heat and vapour transport in clothing insulants. Prototype sleeping bags have been designed which are lighter and warmer than current CF Bags. These new bags should be much cheaper to construct. The study of face masks for use under cold windy conditions has

concentrated on problems associated with moisture condensing on the mask and ways of avoiding this problem. A new design for an arctic tent for use by small patrols has reached the prototype stage.

Various items for use in cold weather were field tested during Exercise Kovik Return held at Rankin Inlet. A questionnaire was circulated to 12 CF bases to obtain information on problems associated with personnel protection during cold weather operations. An analysis of the data will be completed shortly.

DREO scientists are developing applications for lithium sulfur dioxide batteries. Compared to existing types, these batteries have a higher energy density (resulting in a smaller, lighter package) and, more importantly, much improved low temperature performance (down to -40°C). Of significance to northern applications is their use in search and rescue/survival equipment such as Emergency Locator Transmitters, Crash Position Indicators, Personal Locator Beacons and Radar Transponders, and other portable equipment such as radios. The low temperature cranking capability of the BB-248 lead acid battery used for vehicle starting is being improved.

Various research activities related to the mobility and operations of military land vehicles in northern terrain continue both in-house and under contract by the Defence Research Establishment Suffield (DRES). Specific activities include investigations of the mechanics of terrain-vehicle interactions with reference to snow and muskeg, terrain analysis and starting and operation of military vehicles in cold regions.

The thermal physiology program at the Defence and Civil Institute of Environmental Medicine (DCIEM) investigates the response of the human body to exposure to cold in both air and water. Projects completed in 1983/84 include one which demonstrated that greater amounts of muscle glycogen are used to perform low intensity exercise in the cold than in a temperate climate. This suggests a possible requirement for special high carbohydrate diets or a supplement to the military ration in cold climates.

A study completed this year found no variation in the response of the thermoregulatory system to a cold stress administered at different times during the 24-hour cycle. This finding is important if sustained operations are to be conducted in cold climates. Contract research is underway to investigate the effects of caffeine analogues on cold tolerance and to induce adaptation by repeated cold water immersions.

A team from DCIEM (one Defence Scientist and one CF Pilot) has just completed a study of the cold stress experienced by 440 Sqn flying the Twin Otter out of Yellowknife in resupply missions to northern bases. Recommendations of the report will concern new clothing, the CF Supply System, and changes to refueling techniques.

On-going research projects at RMC/MERG included studies of: the enhanced freeze-thaw resistance of concrete; the construction of pavements over highly compressible terrain; soil stabilization for roads and runways in the North; the geothermal characteristics of continuous and discontinuous permafrost in the Canadian Arctic; waste water treatment in arctic regions involving field work at Alert; and extension of a geothermal model to soil conditions at Alert.

## **Plans 1984-85**

### **Personnel**

It is expected that Canadian Forces recruiting activity in the North will be intensified in terms of frequency, duration of stay and numbers of communities visited.

A Native Cultural Awareness Course for 30 persons is planned at CFB Trenton.

### **Maritime Forces**

Aurora sovereignty and surveillance patrols will continue and will involve approximately 500 hours flying time. Support to other government agencies will be provided whenever practicable.

### **Land Forces**

Land forces activities will include further communications exercises, adventure training expeditions and a number of company-level exercises.

### **Air Forces**

Northern activities for air forces are expected to continue at their current level. Hercules aircraft will provide regulatory scheduled service to Alert, Inuvik, Yellowknife and Whitehorse. These aircraft will also be used during the spring, summer, and early fall to airlift supplies to Alert and to support various land force exercises.

### **Research and Development**

The DREP arctic season will involve expeditions to Yelverton Bay and Nansen Sound in May and August to carry out acoustic measurements and to Assistance Bay (south Cornwallis Island) in April and August to perform geomagnetic activity measurements. Annual maintenance will be done at DREP camps in Barrow Strait and Jones Sound in August.

DREV will continue service life trials of the CRV7 rocket motor, involving storage of motors at CFS Alert, until approximately 1990. Prototype development and field testing will be carried out on a smoke marker for use in military search and rescue operations in the arctic environment.

DRES will continue mobility research related to military land vehicles. This will include work on northern terrain transects. Battery research will continue.

Climatic evaluations and field trials will be conducted on several battery applications. Trials will also be conducted on a variety of northern clothing and protective equipment concentrating on laboratory appraisal of the insulative quality of arctic sleeping bags and clothing.

Research aimed at enhancing the protection and performance of Canadian Forces personnel will continue. In addition to many in-house projects, work on several research contracts will begin soon utilizing the expertise available in a number of Canadian universities. These include calorimetry studies to validate the use of heat flux transducers in measuring body heat losses in field studies, and further animal and human studies in the interactions between body biochemistry, metabolism, and heat production/heat loss.

In continuation of the Teal Ruby experiment, a joint Canada/US exercise will be held in the Mackenzie Delta area and the Beaufort Sea. The operation will be based at Inuvik (Canada) and Fairbanks (US).

### **Research Contracts 1983-84**

Duracell Canada Ltd.: Military lithium-sulphur dioxide primary battery (DREO).

Carleton University: Development of a method for predicting offroad performance of tracked vehicles (DRES).

Varta Batteries, Toronto: Development of improved lead acid vehicle battery (DREO).

Fulman Batteries, Louisville, P.Q.: Development of improved lead acid vehicle battery (DREO).

McGill University: Mobility model development terrain characteristics (DRES).

McGill University: Traction mechanics model for evaluating mobility of wheeled vehicles (DRES).

University of Toronto: Mechanisms regarding fat loss in the cold (DCIEM).

University of Toronto: Fat carbohydrate - protein shunts during fat loss induced by exercise in the cold (DCIEM).

Université Laval: Heat production in humans during cold exercise (DCIEM).

University of Toronto: Cold adaptation induced by cold water (DCIEM).

Memorial University: Heat flux transducers and calorimetry (DCIEM).

University of Alberta: Improved cold tolerance by aminophylline (DCIEM).

University of Alberta: Heat production after aminophylline administration (DCIEM).

Computing Devices of Canada: Analysis of various ELF detection algorithms (DREP).

Computing Devices of Canada: Advanced ELF noise cancellation studies (DREP).

Computing Devices of Canada: Investigation of algorithms (DREP).

Barrodale Computing Services Ltd.: Investigation of daily fluctuations of magnetic micropulsations (DREP).

Sonoquest Advanced Ultrasonics Research: Seismic-acoustic ultrasonic modelling (DREP).

Inverse Theory and Application Inc.: Analysis of single-shot seismographs (DREP).

University of Calgary: Investigation of the age of Ward Hunt ice shelf (DREP).

# National Energy Board

## Economic Function: General Government Services

### *Responsibilities*

Under the National Energy Board Act of 1959 and subsequent amendments, the Board has two principal roles. The first is to regulate specific areas of the oil, gas, and electrical utility industries in the public interest. The second is to advise the government on the development and use of energy resources.

The Board is a regulatory body, granting, with the approval of the Governor-in-Council, certificates of public convenience and necessity for the construction and operation of interprovincial and international oil, gas and petroleum products pipelines, and international and designated interprovincial power lines. It issues licences authorizing the export of oil, gas and electric power and the import of gas and heavy fuel oil. The Board issues safety orders for pipelines, regulates the tolls, tariffs and accounting practices of the oil and gas pipeline companies under the Board's jurisdiction, and regulates pipeline utility crossings.

In its advisory role and on its own initiative, the Board may hold inquiries into particular aspects of the energy situation and prepare reports for the information of the government, of Parliament, and of the general public. The Board also carries out studies and prepares reports at the request of the Minister of Energy, Mines and Resources.

In addition, the Board administers certain provisions of the Energy Administration Act, namely the imposition and collection of a charge on the export of crude oil and certain petroleum products and the administration of the price of natural gas in interprovincial and export trade.

### **Northern Pipeline Act**

The Northern Pipeline Act, passed on 12 April 1978, provided the authority for the construction of the natural gas pipeline in Canada along the Alaska Highway, as well as for the creation of the Northern Pipeline Agency to oversee the construction of the pipeline. Certain terms and conditions in the legislation require the company to seek various approvals from the Board and the Minister responsible for the Northern Pipeline Act.

The Board's responsibilities relate mainly to financing and tariffs, approval of the pipe specifications, granting of leave to open orders and regulation of the operation of the line.

### *Review 1983-84*

Worldwide uncertainty with respect to energy prospects generally had an impact in a variety of ways on matters before the Board. For example, the hearing on the Arctic Pilot Project was adjourned to provide its sponsors with an opportunity to investigate prospective European markets for liquified natural gas (LNG). With the fulfillment of the socio-economic and environment terms and conditions previously laid down, final approval was given to construction of the Interprovincial oil pipeline from Norman Wells in the N.W.T. to Zama, Alberta.

During 1983, the Board also initiated a major review of its regulations related to the information required in applications filed with the Board, its Rules of Practice and Procedure, and the regulations for the safety and design of pipelines. In addition, it has been working closely with representatives of industry and the Canada Oil and Gas lands Administration in developing new regulations to govern offshore pipeline construction and operation.

A new staff study was launched for the purpose of updating the Board's 1981 forecast of Energy Supply and Demand to the Year 2000 to take account of new conditions and circumstances. The Board is expected to publish its new report in the summer of 1984. Among other major initiatives undertaken by the Board in 1983 was an expansion of its public communications program. The Board continued to issue its quarterly Regulatory Agenda, a comprehensive report on the status of its regulatory activities, and started publishing Information Bulletins on

a wide variety of the Board's functions and activities to encourage a greater participation, understanding and awareness among public interest groups and industry affected by its decisions.

### **Public Hearings**

During the period under review, the Board conducted public hearings in several locations across Canada. The following are highlights of hearings on matters and projects that affect developments in northern Canada.

### **Northern Canada Power Commission (NCPC)**

In January of 1983, the Minister of Indian and Northern Affairs asked the Minister of Energy, Mines and Resources, to request the Board to advise him on a number of aspects of the operations of the Northern Canada Power Commission.<sup>1</sup> These included cost of service, rate design, general principles of ratemaking, and the regulation of the NCPC.

The Board held a series of public hearings in June and July in nine communities in the two territories, and issued its report in October 1983.

The Board recommended that all changes proposed in its report become effective 1 April 1985. This date was selected to provide sufficient time for completion of all steps necessary to implement a rate regulation scheme.

Further to the Board's recommendations, Indian and Northern Affairs Minister John Munro announced, on 20 February 1984, major decisions affecting the future of the NCPC, including "...the regulation of the NCPC by a Panel of the National Energy Board", territorial participation in the regulation of these rates and the phased relocation of NCPC headquarters to Yellowknife.

<sup>1</sup> The Commission, a federally owned Crown corporation generates, transmits and distributes electricity from hydro and diesel plants in the Yukon and Northwest Territories.

## Arctic Pilot Project

In February of 1982, the Board has commenced a hearing on an application by Arctic Pilot Project Inc. for the construction of natural gas pipeline and liquefaction plant on Melville Island in the Arctic, the transportation of the liquefied natural gas (LNG) in ice-breaking tankers to an eastern Canadian port, where it would be regasified, and finally the export of the natural gas by displacement to the United States.

In late July 1982, the sponsors of the Arctic Pilot Project announced that they were investigating the possibility of selling the LNG to European markets as an alternative to the U.S. market. As a result, TransCanada PipeLines requested an indefinite adjournment of its application to construct the regasification terminal in Eastern Canada because export to Europe would make the construction of the regasification facility unnecessary. The Board granted this request and on 31 August 1982 adjourned the entire proceeding.

In June 1983, the Board directed the project sponsors to submit their views by 1 December with respect to the future conduct of the Arctic Pilot Project proceedings and to address in particular whether the present status should be maintained or whether the proceedings should be discontinued. In their reply, the sponsors submitted that the present status of the proceedings should be maintained. In March 1984, the Board asked the sponsors and other parties for their views on whether the application should be dismissed.

## Interprovincial Pipe Line (Norman Wells)

In 1982, a certificate was issued to Interprovincial Pipe Line (NW) Ltd. to construct approximately 866 kilometres of an oil and gas pipeline extending from Norman Wells, in the N.W.T. to Zama Lake in northern Alberta.

Originally, IPL (NW) planned to complete the pipeline by the end of 1983 and to start operations in early 1984. However, this schedule changed when on 30 July 1981 the Government announced in approving the project, that it required a two-year delay on commencement of field work and a two-and-a-half-year delay on commencement of pipeline construction.

During 1983, the Board continued its review of reports filed by Interprovincial Pipeline (NW) Ltd. concerning geotechnical, environmental and engineering issues. Following an intensive review of these reports, leave-to-construct this line was issued by the Board on 10 June 1983. The Environmental Protection Plan for construction was approved on 2 November 1983 following review by the Board. All construction activities were closely monitored by the Board during the year.

## Information

The Board's 1983 Annual Report published in April 1984 provides a more comprehensive account of the Board's activities in the past year. This and other publications on the Board are available from NEB Information Services, Ottawa K1A 0E5. Phone: (613) 593-6936.

# National Film Board

## Economic Function:<sup>1</sup>

### Responsibilities

The production of motion pictures, film loops, filmstrips, slide sets and still photo exhibits about the Canadian North, its peoples and their activities, its industries, resources, and institutions; the distribution of these materials in Canada and abroad; the distribution in the North of such materials interpreting Canada and exploring issues of National interest; counsel to federal government agencies concerning the application of audio-visual media and the planning, production and distribution of departmental films for information, instruction, training and cultural purposes.

### Review 1983-84

During the year, the National Film Board continued its assistance to the Nunatsiakmiut Society of Frobisher Bay, N.W.T. Nunatsiakmiut produced its first 16mm film *BETWEEN THE TWO OF US*, a forty-minute production in colour. The NFB provided all technical services required to complete the film. Based on the success of the initial filming, Nunatsiakmiut began work on three additional half-hour films on Arctic education. Again, the NFB provided technical support including processing, mixing, titles and completion services. The three films were scheduled for telecast by CBC Yellowknife in March 1984.

The NFB continued to provide support to Cree Communications Societies in the Quebec James Bay area. The Mistassini Lake Communications Society began a program to version NFB titles into the Cree language and started initial research with a view to establishing production facilities in the entire James Bay region. The NFB provided consultative assistance to the Cree Communications Society to launch their research program to survey the communications needs of residents of the area.

The NFB began a production on the ecology of sea ice, *THE EDGE OF ICE*. Filming was done on Baffin Island. Production personnel were drawn from the Nunatsiakmiut Society in the first joint venture of its kind with the NFB. This major film project will be continued in 1984-85.



NFB Crew filming at Virginia Falls, Nahanni River.

During September, 1983, a Film Board crew filmed extensively throughout both the Northwest and Yukon Territories. The Distribution representative collaborated in research for material gathered for the film *RIVER JOURNEY (AU FIL DE L'EAU)*, a 15-minute IMAX film to be screened at the Louisiana World's Exposition in New Orleans from May 12 to the end of October, 1984. Commissioned by the Department of External Affairs to produce a film that would explore the theme of the Fair - "Rivers - Fresh Water as a Way of Life" - the crew filmed in the Mackenzie Delta, Porcupine, Bell, Little Bell and Nahanni Rivers as well as the Richardson Mountains.

The Multi-Media Studio released two slide sets during 1983-84. *PREHISTORY OF NEWFOUNDLAND AND LABRADOR* is Volume 67 in the on-going series, Canada's Visual History, co-sponsored by the National Museum of Man, National Museums of Canada.

<sup>1</sup> National Film Board expenditures are *not* reported in Annual Northern Expenditure Plan.

*Whitehorse/Yellowknife*, part of the Canadian Cities from the Air Series, was co-sponsored by External Affairs, Canada.

An English version of *Debout sur leur terres (Our Land, Our Truth)* and French versions of *Beyond the Frontier (Aux limites du possible)* and *Charting the Frozen Sea (La mer de Beaufort)* were completed in 1983.

### Northern B.C. and the Yukon

Film service to Northern B.C. and the Yukon territory is provided by an NFB library in Prince George and a library in Whitehorse operated by the Yukon Department of Heritage and Cultural Resources. The Yukon library is provided prints of NFB titles at cost; prints of most federal department sponsored titles are also deposited at Departmental expense. These two libraries provided service to the extent of 24,000 bookings during 1983/84. In addition, backup service was provided by the NFB regional office in Vancouver.

The provincially owned and operated Television Broadcast Centre - "Knowledge Network" - services the whole of B.C. and the southern half of the Yukon. Recent surveys have shown a considerable audience in the northern part of the service. During the report year there were more than 1300 telecasts of NFB films.

The Yukon library has begun to build a collection of videotapes and is servicing a growing demand for videocassettes.

### Northwest Territories

The Edmonton NFB office, which services Yellowknife and the Western N.W.T., coordinated public screenings and commercial activities in 1983-84 as well as continuing to offer a film loan library to the area.

In collaboration with CBC North, the Edmonton office organized a major film festival during Inuvik's 25th Anniversary celebrations in July. The festival, which was free to the public, was held over a five-day period in the "Ingamo Hall" of the Native Friendship Centre. The theme of the festival was "60 Years of the North on Film", and programmed 'Northern' titles from the NFB archives in conjunction with many new releases. One of these, *The Last Mooseskin Boat*, was premiered at the festival. Six privately produced films were also included in the program consisting of 30 films. Crowds were enthusiastic for every screening, with some evenings resulting in 'standing room only'. One thousand people attended the film festival over the five-day period.

*The Last Mooseskin Boat* was also presented in Yellowknife at a public screening in October attended by about 300 citizens. This screening was organized by the Department of Information of the Government of the N.W.T. and the Edmonton Office of the NFB.

On the commercial front, the Edmonton office researched the science curriculum of the N.W.T. Department of Education and provided about 15 selected titles for preview to purchase for a meeting of educational resource centre directors in May, 1983. The material was well received. Thirty NFB titles were purchased during the period ending March, 1984, the majority of these on video format.

The NFB office in Ottawa, which serves the Eastern Arctic, maintains a library of approximately 1,200 prints for use exclusively in the North. In addition, prints are made available from the regular Ottawa inventory on an as required basis. Eight Hundred and Sixty (860) films were booked by users in the Eastern Arctic in 1983.

### Plans 1984-85

Plans are underway to assist with an Inuit Broadcasting Corporation drama workshop to be held in Cambridge Bay in April of 1984. Participants will include several people from the Nunatsiakmiut Society.

The Atlantic Studio filmed the Inuit Circumpolar Conference held in Frobisher Bay during July, 1983; a half-hour film based solely on the Conference will likely be forthcoming in 1984.

The Multi-Media Studio will have several works in progress during 1984-85. *Canada's High Arctic Series* will consist of 5 sound filmstrips for junior secondary and secondary level. *Toonik Time*, 1 sound filmstrip for primary and junior level, part of Canadian Holidays and Festivals Series. *Minnie Freeman*, 1 sound filmstrip, part of the on-going Between Cultures series, based on Minnie Aodla Freeman's book, "Life Among the Qalunnat"; artwork by Alooook Ipellie. *Life Among The Padlimiut Eskimo*, 2 or 3 sound filmstrips recording life with the Caribou Eskimo, 1933-1944. *Rush to the Klondike*, 1 sound filmstrip, part of the "Oral History Series". *Native Communities*, a series of sound filmstrips for use at the secondary school level; one title of this series will be located in the Northwest Territories.

The Edmonton office has now finalized, at the request of the N.W.T. Department of Education, a series of preview meetings for Yellowknife in May. The selection of product will centre on films for use in Values Education for Secondary Audiences. The specific themes proposed are: Drug and alcohol-related problems; family violence and life skills. Further, the Yellowknife centre has proposed and received our agreement that this library, with an inventory of 3,400 titles, offer a selection of NFB films to the North by being granted a repository status by NFB for the film selected. Production selection and evaluation is now underway. The new service will be in operation by September 15, 1984.

# National Museums of Canada

## National Programmes

### Economic Function: Culture and Recreation

*Canadian Conservation Institute*

#### **Responsibilities**

Through its central laboratory in Ottawa and its Mobile Laboratory Programme, CCI provides to publicly-owned museums and art galleries across Canada services relating all aspects of artifact conservation.

#### **Review 1983-84**

Through CCI's Training and Information Division, a week long Care of Collections Seminar was held in the Yukon, sponsored by the Yukon Historical and Museums Association. These seminars are designed to advise museum personnel on the care, handling, storage and display of artifacts in their collections. Emphasis was placed this year on leather and textile artifacts. Following the seminar, several museums received advisory visits.

CCI's Archaeology Division provided conservation assistance at the Thule Eskimo Site at Cache Point in the Northwest Territories. The archaeological excavation of this site is administered by the Northern Heritage Society in conjunction with the Prince of Wales Northern Heritage Centre. Assistance was provided with the registration, field treatment, safekeeping and transportation of artifacts found on the site. Two hundred objects requiring specialized treatment were sent to CCI.

Treatment of 68 waterlogged wood and baleen artifacts from the archaeological site on Herschel Island, Yukon Territory, was completed.

#### **Plans 1984-85**

CCI plans to send a conservator to Cache Point again this year. Work will also continue on the treatment of artifacts recovered during 1983. The treatment of artifacts recovered during the 1978 excavations at Dealy Island will continue.

Care of Collections seminars will be offered again in the Yukon and also in the Northwest Territories. CCI's most recent publication *CCI Notes*, which also deals with care of collections, will be distributed free to all museums in both the Yukon and the Northwest Territories.



Conservator at CCI working on a Baleen net from Cache Point, N.W.T. - Photo credit: CCI

## Museum Assistance Programmes

#### **Responsibilities**

The Museum Assistance Programmes provide financial and technical assistance to non-profit museums and related institutions wishing to participate in the accomplishment of the objectives of the National Museum Policy. The objectives of this policy are to preserve the collections and artifacts which reflect Canada's cultural heritage, and to increase public access to this heritage. Assistance is available towards the registration of collections; the training of museum personnel; the preparation, production and

circulation of exhibitions; the employment of conservators; the purchase of preservation - related equipment; the upgrading of facilities; planning and special projects; and the public programming activities of Associate Museums and National Exhibition Centres.

#### **Review of 1983-84 for N.W.T.**

A grant of up to \$20,000 was awarded to the Northern Life Museum and National Exhibition Centre at Fort Smith for its 1983-84 public programming activities.

The final payment of \$6,000 for a grant of up to \$23,900 was released to the Prince of Wales Northern Heritage Centre in Yellowknife towards the registration of the Centre's ethnology collection.



Looking south over KdLw-1, a multi-component stratified archaeological site in the east-central District of Mackenzie, NWT. Upper sandy portion of hill had Pre-Dorset levels dating ca. 1500 B.C., while lower tundra portion had Taltithei levels dating 400 B.C. to Historic trapping era.

#### **Plan for 1984-85, N.W.T.**

The Northern Life Museum and National Exhibition Centre at Fort Smith will receive a grant of \$21,900 for its 1984-85 public programming activities.

Payment of \$17,700 for a grant of up to \$32,200 is committed to the Prince of Wales Northern Heritage Centre in Yellowknife under the Registration Assistance Programme towards the registration of the Centre's ethnology collection.

A grant of up to \$3,900 is committed to the Nunatta Sunaqtangit Museum Society at Frobisher Bay under the Upgrading and Equipment Assistance Programme towards the purchase of collections storage equipment.

#### **Plan for 1984-85, Yukon**

A grant of up to \$24,600 has been committed to the Dawson City Museum and Historical Society under the Upgrading and Equipment Assistance Programme towards a planning study.

A grant of up to \$22,500 will go to the MacBride Museum Society in Whitehorse under the Upgrading and Equipment Assistance Programme towards a planning study.

## **National Museum of Man**

### *Canadian Ethnology Service*

#### **Responsibilities**

The Canadian Ethnology Service documents the cultural heritage of the aboriginal peoples of Canada. This documentation includes research, collections, analysis and dissemination of information on the ethnographic, linguistic and material culture of the Indian, Inuit and Métis peoples of the Yukon and Northwest Territories.

#### **Review 1983-84**

Staff research concentrated on Athapaskan land use and housing and on Labrador Inuit ethnohistory and material culture. Research projects contracted through the Ethnographic Research Field Contract programme included: recording and comparative analysis of oral narratives of the Tlingit of Atlin, British Columbia and Athapaskans of the southern Yukon; study of women's roles within Tahltan society at Whitehorse and various other communities and the recording of oral history pertaining to Inuit whaling activities in the communities of Repulse Bay, Rankin Inlet, Baker Lake and Chesterfield Inlet.

#### **Plans 1984-85**

Long-range staff research will result in the completion of three major publications, two on Athapaskan housing and culture change and one on Labrador Inuit material culture. Field contract research will concentrate on traditional ethnography of the Tutchone Athapaskans in the vicinity of Beaver Creek, Burwash Landing, Pelly Crossing and Mayo, Yukon Territory. In addition, the traditional relationships between the inland Tlingit, Kaska and Tahlitan Athapaskans in the vicinity of Watson Lake and Teslin, Yukon Territory and Atlin and Telegraph Creek, British Columbia will be investigated. Field research will attempt to clarify the social relationships of the Southern Tutchone of Aishihik with the people of White River, Carmacks and Fort Selkirk, Yukon Territory.

### *Archaeological Survey of Canada*

#### **Responsibilities**

The Survey undertakes research and rescue archaeology pertaining to the prehistoric occupation of Canada.

### Review 1983-84

The 1983 field-season saw: (1) the continuation of investigations at the Bluefish Caves locality and of general archaeological and paleoenvironmental survey activities in the Porcupine River drainage area, northern Yukon Territory, and (2), completion of the preliminary archaeological inventory of the Yukon Coastal Plain.

### Bluefish Caves Investigations and Related Surveys

This work was carried out with support from the Polar Continental Shelf Project, the Yukon Government, and with the collaboration of the people of Old Crow. Lasting from mid-June to mid-August, it was directed at expanding excavations at Bluefish Caves I, II and III.

Results included:

- discovery inside Bluefish Cave II of a small series of lithic artifacts in association with Late Pleistocene faunal remains dated at between 10,000 and 18,000 years ago, and confirmation that some of these bone elements bear traces of butchering activities, thus making the Bluefish Caves locality one of the most ancient archaeological sites in the New World;
- confirmation of the existence along the southern margins of the Porcupine River basin of an extensive series of Karst features - some of which are still active - that offer a great potential for research advances in the fields of Late Pleistocene Beringian archaeology and paleoecology;
- discovery in the Old Crow Flats of a small series of traditional fish camp sites which, when further investigated, will greatly add to our understanding of this poorly known, albeit important, facet of late prehistoric and early historic Vuntut Kutchin - Athapaskan land use.

### Yukon Coast Archaeological Inventory

This Inventory represents the continuation of work initiated in the summer of 1982, partly on behalf of the Yukon Government, and in the context of planned northern hydrocarbon-related developments. The survey (mostly aerial with a series of ground checks) was carried out in early August and dealt principally with the Beaufort Sea littoral between King Point and the delta of the Firth River. Two proposed "transportation corridors" located between Kay Point/Babbage River and Stokes Point, within the Coastal Plain itself, were briefly checked.

Field excavations were conducted on a site, found in 1981, near Mosquito Lake in the Mackenzie District, N.W.T. The site, which covered the entire north part of a hill, revealed many tools and artifacts, including Proto-Historic Chipewyan, Lake, Middle and Early Taltheili, Pre-Dorset components as well as some which could not be assigned.

A varied programme of research was undertaken in the southern and central Yukon territory, and included principally a survey in the Tatchun-Frenchman Lake area near Carmacks, test excavations to determine the nature of remains at the historic Ft. Reliance site located north of Dawson, and clearance of Alaska Highway reconstruction right of way west of Whitehorse.

The last mentioned project, which was done at the request of and was supported by the Department of Public Works, resulted in minor, isolated finds.

The Frenchman-Tatchun Lake survey examined sites previously reported in a survey done by a consulting firm in 1981 for the Northern Canada Power Commission. One of the sites at Frenchman Lake was found to be more than an acre in extent but archaeological deposits are very thin and dispersed. At another site, located between the two lakes, a microblade production workshop was excavated. This activity locus, only a few metres in extent, yielded a relatively pure technological assemblage illustrating the various steps in the production of microblades, a very specialized technique of particular interest to archaeologists.

Ft. Reliance was established by François Mercier in 1874 for the Alaska Commercial Company. Actual construction and management of the trading post over most of its duration (1874-1886) was by Leroy N. "Jack" McQuesten. Among other northern pioneers associated with the post are A. Mayo, A. Harper and J. Ladue. It was previously known that surface pits, historic artifacts, and prehistoric or contact-period stone artifacts existed at the site, but no excavations had been made to fully determine the condition of the site and its value for future research and public historical appreciation. The site was found to be in good condition, although part of its face along the Yukon River has been lost to erosion. The foundations of most of the original trading post cabins appear to be present together with other structures including a number of semisubterranean house depressions which it is thought were occupied by Han Indians. The houses, portions of which were excavated, are contemporary with the trading post. Small numbers of stone artifacts also were found at several locations. These largely predate the trading post - by how many decades or centuries it is not known. Considering its intact condition and the presence of structural remains and artifacts, the site may be one of the most important ones of its kind in northwestern Canada.

An archaeological reconnaissance of the lower Peel and Arctic Red Rivers, and of the Mackenzie River between Arctic Red and the Delta was made. Ten sites were found, all of them relating to the late prehistoric and historic periods. Fluvial processes seem to be responsible for the paucity of archaeological remains in this low-lying, poorly drained area.

### **Plans 1984-85**

Further fieldwork, especially at the Bluefish Caves and in the general vicinity is not contemplated until 1985, following the processing of the large amount of information that has been obtained in 1983.

In the course of the next field season, archaeological surveys and excavations in the Anderson Plain area will be done. Reconnaissance in the lower Mackenzie area, concentrating on a series of small lakes on higher ground north of Travailant Lake, will be continued.

Archaeological investigations in the Cape Bathurst and Devon Island areas, N.W.T. will be carried out.

### **National Museum of Natural Sciences**

#### *Vertebrate Zoology Division*

#### **Responsibilities**

The Vertebrate Zoology Division contributes to the knowledge of animal species in Canada through comprehensive faunal surveys, field research programs, the maintenance of important collections, and research in systematics, taxonomy, and zoogeography.

The Vertebrate Ethology Section undertakes studies of the behaviour of vertebrates, particularly birds and mammals. Since 1968, this section has carried out studies of the relationships between species of arctic animals and the behavioural adaptations that enable them to survive in high arctic environments. Most of the field research has taken place at the National Museum of Natural Sciences High Arctic Research Station at Polar Bear Pass on Bathurst Island, Northwest Territories.

#### **Review 1983-84**

The Vertebrate Ethology Section conducted an intensive banding program of Ivory Gulls. Logistic support was provided by the Polar Continental Shelf Project, Department of Energy, Mines and Resources. Over 500 Ivory Gulls were banded at Resolute Bay, Grise Fiord, Seymour Island, and Brodeur Peninsula from June to August and new colonies were discovered on Ellesmere Island, Devon Island, and Brodeur Peninsula. The glaciers and ice fields north of Makinson Inlet, Ellesmere Island, and the desert plateaus of Brodeur Peninsula can now be defined as very important sites of Ivory Gull production in the eastern Arctic.

Returns from the banded birds are being received from west Greenland.

#### **Plans 1984-85**

Plans are to continue the Ivory Gull banding program from mid-June through August. In addition some maintenance work will be undertaken at the National Museum of Natural Sciences High Arctic Research Station on Bathurst Island.

### *Paleobiology Division*

#### **Responsibilities**

To collect Pleistocene vertebrate material from northern Canada and to curate and describe it in an attempt to reconstruct the vertebrate history of the region during the ice age.

#### **Review 1983-84**

Field work was carried out in the Dawson, Sixtymile and Carmacks areas of the Yukon Territory between July 30 and August 15. Many ice age vertebrates remains were collected, the most interesting of which are two camel bones, eight muskox skulls (of both the tundra and extinct helmeted muskox), a wolverine jaw, and an excellent grizzly bear skull from a new locality in the Carmacks area. The latter locality is the most southerly known in the Yukon for the typical late Wisconsin glacial fauna.

#### **Plans 1984-85**

Ice age vertebrate remains in the Old Crow, Dawson and Sixtymile areas of the Yukon will be collected during August and early September.

# National Research Council Canada

## Economic Function Long Range Research

### Herzberg Institute of Astrophysics

#### Review 1983-84

Continuous monitoring of cosmic ray intensities was carried out at Alert and Inuvik in the Northwest Territories as part of an international worldwide network program. The data are sent on a regular basis to the World Data Center for distribution to scientists.

#### Plans 1984-85

The cosmic ray monitoring program will continue at the same level.

### Division of Mechanical Engineering

#### Hydraulics Laboratory

#### Review 1983-84

In conjunction with the Geotechnical Section of the Division of Building Research (NRC), the mechanical properties of the ice in the rubble-field around Tarsuit Island were measured. Tarsuit Island is Gulf/Dome's concrete retained island in the Beaufort Sea. The tests performed include measurements of the ice salinity, grain structure, uniaxial and confined (bi-axial) compressive strength and shear strength. The results of these tests were used to define the full failure envelope of granular sea ice over a wide range of loading rates.

The main carriage, rack and rails for the refrigerated model test basin in the Hydraulics Laboratory have now been manufactured and installed. The instrumentation, computer hardware and software has been set up and testing is underway. The first test series involved a study of the ice loads and parameters affecting the loads on a wide inclined plane. The results of the tests have been compared to two theoretical models, both of which underpredict the total load on the structure.

#### Plans 1984-85

The work on the ice loads on an inclined plane will be expanded to try to elucidate the interaction process and to define, both experimentally and analytically, the individual components of the load on the structure.

Tests of the indentation of a vertical indenter in an ice sheet will be undertaken in both model ice and freshwater ice in an attempt to determine the influence of differences in fracturing behaviour and the failure envelope of the ice on the overall loads on a vertical indenter.

### Division of Chemistry

#### Review 1983-84

Measurements of the properties of gas hydrates in the laboratory have continued, to better characterize natural gas hydrate deposits which occur in northern Canada and at shallow depths below the sea bottom. Theoretical modelling suggests that the extraordinarily low thermal conductivities of gas hydrates are related to scattering of heat-conducting phonons by the enclathrated molecules. The recent presence of gas hydrates in geologic sediments may be recognized by the presence of oxygen-18 enriched water. X-ray and neutron diffraction studies have shown that the structure II crystalline form is the stable hydrate both for very small guest molecules (e.g. krypton) and relatively large molecules (e.g. propane).

#### Plans 1984-85

Studies of gas hydrates will continue, with particular emphasis on calorimetric behaviour.

### National Aeronautical Establishment

#### Northern Aerial Magnetic Reconnaissance

During late April and early May 1984, NAE's Convair 580 aircraft will carry out an aeromagnetic survey between the northern portion of Greenland and Ellesmere Island, and offshore eastern and southern Greenland.

A survey of a portion of Greenland's icecap during September 1984 is being considered but plans are indefinite at this time.

### Division of Building Research

#### Review 1983-84

Several types of in situ test equipment and various methods generally used to obtain engineering parameters to the design, construction and evaluation of the performance of artificial drilling islands in the Beaufort Sea, were investigated. The field test program was carried out in the deltaic soils of the Fraser River which are similar to the deltaic soils in the Beaufort Sea. Engineering tests were also performed on clay samples from the Tarsiut drilling island in the Beaufort Sea.

Permafrost ground temperatures were measured at several sites in northern Manitoba and at Alert, N.W.T. Investigations were continued at several locations in the Y.T. and the N.W.T. to assess the long-term performance of insulated and uninsulated road and airfield embankments constructed on permafrost. Studies of bridge foundations at two locations on the Dempster Highway, Y.T. and of building foundations at Inuvik and Alert, N.W.T. were continued. Results obtained from field tests on pile foundations at Inuvik subjected to vibratory loadings were evaluated. Instrumentation was installed at test sites on Richards Island in the Mackenzie Delta and at Inuvik to study the electric potentials and currents developed during freezing of earth materials.

Preliminary tests on samples of saline soils obtained from the east coast of Baffin Island were done and a comprehensive laboratory test program to study the mechanical properties of frozen saline soils was begun. Laboratory studies of the thermal and mechanical properties and the deformation behaviour of frozen soils and model piles in frozen ground were continued. Laboratory research and numerical studies of frost action processes and the effects of frost heave on the operation of buried chilled gas pipelines in unfrozen areas of the discontinuous permafrost zone were continued.

Field measurements of the compressive strength of sea ice and its evolution from first-year to multi-year ice were carried out at Mould Bay. Laboratory measurements of strength and deformation of various ice types from the Arctic were continued. Observations of ice behaviour, including horizontal movements, strains and stresses, around Adams Island at the intersection of Navy Board Inlet and Lancaster Sound began. Laboratory investigations of the mechanical properties of ice rubble were begun. Field studies of grain structure and strains in first-year sea ice were carried out at Pond Inlet.

A laboratory program conducted for Public Works Canada to determine the strength and hydration characteristics of cement paste exposed to low temperatures and a marine environment was essentially completed.

During the year assistance was given to Energy, Mines and Resources Canada in the preparation of the new Northern Residential Standards for Energy Efficient Housing. The Standards will be issued, together with explanatory notes, in mid-1984.

#### **Plans 1984-85**

A marine geotechnical engineering program will be undertaken and will include the use of in situ freezing techniques to obtain undisturbed samples of foundation sands from an abandoned drilling island in the Beaufort Sea. The samples will be used to evaluate soil density and liquefaction potential in situ. Additional in situ tests with the cone, dilatometer and pressure meter will be carried out to correlate with density and liquefaction potential. A cooperative study with the NRC Hydraulic Laboratory will be undertaken to investigate the behaviour of model underwater berms subject to wave action.

Field studies will be continued on foundations for various structures and facilities build on permafrost and on the interaction between floating ice and structures. The program of permafrost ground temperature measurements at various locations will be continued. Field observations and measurements of ice interactions will be continued at Adams Island. In conjunction with ice breaking trials in the Eastern Arctic, field measurements of ice properties and response will be carried out.

Laboratory studies of frozen ground, frost action in soils, sea ice, multi-year ice and permafrost foundations will continue. The laboratory program to study the strength and deformation behaviour of frozen saline soils will be continued.

Investigations of the strength characteristics of cement paste subjected to sea water and low temperatures will be extended to include microstructural studies. Many DBR research projects on the thermal and moisture performance of buildings subjected to a cold climate environment are directly relevant to the construction and operation of housing and small buildings in the North and will be continued.

Continued support will be given to the development of the Northern Residential Standards and conducting seminars to explain certain related requirements. A Handbook of Northern Residential Construction will be prepared as a cooperative effort of CMHC, DIAND and DBR/NRC. The objective of the Handbook is to ensure the construction of durable and safe building.

### **Canada Centre for Space Science**

#### *1983-84 Rocket Program*

Five sounding rockets were launched during February and March 1984 from the Churchill Research Range.

ARIES (Auroral Rocket and Imager Excitation Study) was a major program involving the launching of two Black Brant VIIC rockets as part of an intensive auroral modelling campaign. The rockets designated ARIES "A" and ARIES "B" had exceptionally big payloads weighing 455 and 423 kilograms, and comprising sixteen and nineteen experiments respectively. Both rocket vehicles included the SAAB S-19 guidance system, and the payload included an Attitude Control System (ACS). Both payloads were recovered.

Equally important as the on-board rocket experiments, ground based measurements were made from Churchill and at two down-range ground observation sites, located at Lac Lee and Bird; 126 and 250 kilometers down-range respectively.

Two Nike Orion rockets and one Black Brant VB rocket were launched for NASA at Churchill this winter.

#### *1984-85 Rocket Program*

MARIE (Mechanism of Auroral-Region Ion Excitation) which was postponed in 1983/84 will be launched at the Churchill Research Range in December 1984. MARIE will involve the launching of the first three stage Black Brant X rocket from Churchill to study ion energization in the 500-1000 km region.

Two new rocket experiments were approved by the Scientific Advisory Committee for launching at the Churchill Research Range. WATERHOLE IV is a repeat of the Waterhole series involving the release of water vapour into a quiet auroral arc. COBRA is an experiment to measure the submillimeter cosmic background spectrum left by the "big bang".

SMERF (Solar Mesospheric Explorer Rocket Flight) is a Black Brant IIIA rocket which will be launched in May 1984 for the Atmospheric Environment Service of the Department of the Environment.

### **CANOPUS**

CCSS is proceeding with the CANOPUS project, a network of unmanned geophysical observatories. Fifteen sites in the Northwest Territories and the northern parts of Saskatchewan, Manitoba and Ontario have been selected. When completed the network of stations will automatically measure changes in the Earth's magnetic and electric fields induced by solar particle precipitation.

Site preparation work at Rankin Inlet and Eskimo Point was completed during 1983. Instrumentation will be installed at these locations late in 1984. No further site work at northern locations is scheduled for 84/85.

## National Aeronautical Establishment/Division of Energy

### *Wind Energy Program*

A co-operative project to evaluate a 50 kW vertical axis wind turbine (VAWT) is proceeding under an agreement between the National Research Council and the Churchill Northern Study Center. The prototype wind energy conversion system was commissioned in November 1981 and is connected into the local electricity distribution network at Churchill, Manitoba. By the end of 1983 the system had operated for approximately 6200 hours and contributed about 66000 kWh to the community's electricity supply. The installation is one of several across Canada designed to evaluate the performance and operation of the NRC-developed VAWT under the environmental and other conditions prevailing at the various sites. This particular unit continues to provide information on the applicability of current VAWT designs to Northern climates.

The conversion of wind energy to electrical energy of considerable interest in the North because of the high cost of diesel fuel. Enquiries for similar projects in the Yukon and the Northwest Territories are being considered under the framework of the Federal/Territorial Agreement on Conservation and Renewable Energy Development, the Remote Communities Demonstration Program and in conjunction with the Northern Canada Power Commission.

## Arctic Vessel and Marine Research Institute

### **Review 1983-84**

The construction of the Arctic Vessel and Marine Research Institute's new laboratories in St. John's, Newfoundland continued. Phase I, the office complex, was completed at the end of 1982 and the ice tank, towing tank and seakeeping tank are due to be finished in late 1984. Installation of the major equipment, such as towing carriages and wavemakers will take place immediately afterwards and the commissioning phase is expected to be finished by the end of 1985.

Considerable effort has been expended during the past year to develop testing techniques to be used in the new facilities, particularly in the ice tank.

A small facility built in the Hydraulics Laboratory of N.R.C. in Ottawa has provided useful experience. A 1/40 scale model of a R-Class Icebreaker was tested in a wide range of ice conditions and the results have been compared with the already considerable bank of model and full scale data available for this ship.

AVMRI staff participated in full scale trials on several vessels operating in the Arctic. A new Doppler speed log was tested during trials of the US Coast Guard ship, Polar Star, during a trial off the west coast. Measurements of ice strain were made during ramming trials on the Kigoriak.

The Institute was involved in the evaluation of new bow designs proposed for the icebreaking bulk carrier "M.V. Arctic".

Experiments on the resistance, propulsion and seakeeping qualities of three alternative designs were carried out in the Ottawa towing tank. The AVMRI model was then made available for tests at Arctec Canada in Kanata, Ontario and in Hamburg and Finland.

A feasibility study to investigate the possibility of modelling the phenomenon of a ship ramming ice was begun. This study will review and summarize all relevant scientific and engineering information including laboratory data on impact and crushing of ice, corresponding field data on ice properties, available data on ship vibrations due to collision and on structural response. Relevant ice properties are being identified and scale effects being considered.

AVMRI staff members served on various committees and advisory boards, both national and international, making recommendations for the standardization of model and full scale testing of ships in ice and assisting in the establishments of standards and regulations for the safety of marine transportation in the Arctic environment.

### **Plans 1984-85**

New personnel are being recruited to enable the Institute to meet the increased demands of operating the major national facility now being built in St. John's, and of responding to the needs of industry and other Government departments.

Projects related to the commissioning of the St. John's facilities will be given high priority so that they can be brought into operation as quickly as possible.

Involvement in several full scale trials is planned together with an increased level of activity on basic studies concerning ship/ice interactions.

# Northern Canada Power Commission

## Economic Function<sup>1</sup>

### Business of the Commission

Northern Canada Power Commission (NCPC) is a Federal Crown Corporation which operates under authority of the Northern Canada Power Commission Act. It is concerned with the planning, construction and management of public utilities, primarily electrical, on a commercial basis. For this purpose, it is empowered to survey utility requirements, construct utility plants in the Northwest Territories (NWT), the Yukon Territory (YT) and, subject to approval of the Governor General in Council, elsewhere in Canada.

The Commission is the principal producer of electricity north of 60° and operates the main transmission networks in the Yukon and Northwest Territories. Heat, water and sewerage service utilities are operated at Inuvik, NWT. Wholesale heat supply is provided to the Northwest Territorial Government for distribution at Frobisher Bay. Residual heat recovery systems are presently operated at Cambridge Bay, Coppermine, Lac La Martre, Pelly Bay, Igloolik and Rankin Inlet in the NWT and at Dawson City, YT.

The Commission's head office is located at Edmonton, Alberta. Regional offices are located in Yellowknife, NWT and Whitehorse, YT.

The Authorizing Act requires that operations of the Commission shall be self sustaining within each rate zone as defined in the Act. Consequently, rates charged for utilities supplied must provide sufficient revenue to cover interest and principal payments on loans made to the Commission, operating, maintenance, administrative and all other expenses and contingency allowances.

The accounts of the Commission are subject to the audit of the Auditor General of Canada.

### Review of 1983-84

During the 1983/84 fiscal year, the Commission provided retail electric utility service to 49 communities in the NWT and to 4 in the Yukon as well as to customers in Field, British Columbia. The Commission also supplied wholesale electrical energy to the local electrical distributors in Yellowknife, NWT and Whitehorse, Haines Junction, Ross River, Carmacks and Keno City in the Yukon. This service was provided from 7 hydro-electric plants and 52 diesel-electric plants located in the general vicinity of the communities which they serve.

### National Energy Board Hearings and Recommendations

In January, 1983, the Hon. John Munro, Minister of Indian and Northern Affairs, asked the National Energy Board (NEB) to provide him with advice on a number of aspects of Northern Canada Power Commission's operations. These included determination of cost, rate design, general principles of rate making and the regulation of NCPC.

The NEB conducted a series of public hearings in 9 different communities throughout the two territories during June and July, 1983 in which NCPC participated.

In October, 1983, the National Energy Board recommended in a public report that a "duly appointed federal regulatory agency be given complete and final authority in establishing NCPC's annual revenue requirements for a given period, and in determining the cost-based rates associated therewith".

Other recommendations contained in the report are that:

- NCPC continue to operate as a single entity owned by the federal government, with the head office remaining in Edmonton;
- NCPC rates be based on the true costs of providing electricity to its customers in the north, with separate rate zones for areas supplied from hydro or diesel generation;
- some debt should be converted to equity;
- the proportion of debt that exists because of prior losses, and outstanding loans incurred in respect of assets no longer useful, should be forgiven.

The Board recommended that all changes proposed in its report become effective April 1, 1985. This date was selected to provide sufficient time for completion of all steps necessary to implement a rate regulation scheme.

Mr. Munro reviewed the NEB's recommendations and in February 1984 announced that cabinet had made several major decisions.

- NCPC will move its headquarters from Edmonton to Yellowknife. In addition, a small complement of senior staff will be relocated to Whitehorse. The move north is to be completed within 3 years.
- the Commission will be regulated by the National Energy Board. The NEB panel responsible for regulating NCPC will have 4 members, 2 of whom will be nominated by the NEB (one of whom will be the Chairman) and one member will be nominated by each Territorial Government.
- the Commission's Board of Directors will be expanded, with the addition of two new members.
- NCPC's rates should reflect the cost of service and that subsidy programs should be a separate item. The current subsidies provided by Canada, including the Federal Power Support Program, will be extended for one more year to March 31, 1985. During the coming year, the Government plans to study the question of Federal power subsidies.

<sup>1</sup> NCPC expenditures are *not* included in the Annual Northern Expenditure Plan's Economic Function table. A financial summary is however included in Appendix I to that part of this publication.

## Pricing

In compliance with the 6/5 pricing restraint formula, all rate increases in the NWT and YT were restricted to 6% in April, 1983. In 1984, NCPC rates are expected to increase no more than 5% above the 1983/84 levels.

## Generation and Sales

Total sales of electric energy in 1983/84 are expected to be 2,047,000,000 MJ, an 8.8% decline from 1982/83. Generation is expected to total 2,304,400,000 MJ in 1983/84, a drop of 8.6% from the previous year. The NWT share of total sales is anticipated to reach 1,308,600,000 MJ, a marginal decrease of 0.9% from 1982/83. In the YT, sales are expected to drop by 20.2% to 734,400,000 MJ in 1983/84. Generation of electric energy in the Northwest Territories and the Yukon Territory is expected to be 1,500,100,000 MJ and 799,560,000 MJ respectively in 1983/84. These figures indicate a drop of 1.0% and 20.2% respectively from the previous fiscal year.

The non-coincidental peak demands in the NWT and YT are expected to be 79,302 kW and 46,866 kW respectively in 1983/84, which compares with 1982/83 non-coincidental peak demand of 79,163 kW and 60,849 kW respectively.

## Capacity Expansion

Northern Canada Power Commission's generation system was expanded by approximately 1.8 MW in 1983/84 with the replacement of internal combustion units at Arctic Bay (0.12 MW), Fort Good Hope (0.15 MW), Fort Norman (0.20 MW), Lac La Martre (0.13 MW), Lake Harbour (0.12 MW), Pond Inlet (0.34 MW), and Tuktoyaktuk (0.74 MW). The Commission plans to increase its generation capacity in 1984/85 with the addition of 2.82 MW, by replacement of one combustion unit at Holman Island (0.22 MW), one at Sachs Harbour (0.10 MW), and the addition of one 2.5 MW unit at Fort Smith.

The construction of a fourth hydroelectric generating unit at Whitehorse, YT was completed by year end, adding approximately 20 MW to the system capacity.

# Northern Pipeline Agency Canada

## Economic Function: Transportation

### **Responsibilities**

The Northern Pipeline Agency was established in April, 1978, with the proclamation of the Northern Pipeline Act. The Agency oversees the two basic objectives of the legislation: to facilitate planning and construction of the 3 240-km Canadian segment of the Alaska Highway Gas Pipeline and to regulate the project so as to maximize the economic, industrial and energy benefits for Canada; to minimize adverse social and environmental impacts; and to ensure that the system is safe and reliable.

The pipeline will carry natural gas from Alaska along a route which closely follows the Alaska Highway through Yukon and northeastern British Columbia before entering central Alberta. At Caroline, Alberta, the line to the United States branches into two legs, one running through southeastern British Columbia and the other through southwestern Saskatchewan. A future pipeline lateral along the route of the Dempster Highway, joining the main pipeline at Whitehorse, Yukon, would give Canada access to established reserves in the Mackenzie Delta and any new reserves that might be found in the Beaufort Sea.

### **Review 1983-84**

As indicated in last year's report, the Canadian and U.S. pipeline sponsors stated in April, 1982, that current economic conditions precluded completion of the pipeline project by the planned date of 1987 and indicated they would continue to work to conclude the project by late 1989. Throughout the year under review, therefore, the activities of the Canadian company, Foothills Pipe Lines (Yukon) Ltd., and the Northern Pipeline Agency (NPA) were reduced significantly in order to keep pace with the delay in the project schedule.

Following the March, 1983 approval of the final routing of the pipeline through the Yukon, the federal government, in November, 1983, entered into an easement agreement with Foothills covering the right-of-way of the pipeline. The right-of-way is initially 240 metres wide and will subsequently be reduced in most areas to 40 metres following completion of construction of the pipeline.

The establishment of the final routing also enabled the Department of Indian Affairs to lift the freeze new on land dispositions within an eight-kilometre corridor encompassing the pipeline route.

In October, 1983, the Governor in Council approved the reappointment of members to the Yukon Advisory Council for a two-year period, effective August 22, 1983. The Advisory Council was established in February, 1979, to advise the Minister on all matters relating to the planning and construction of the Alaska Highway Gas Pipeline Project in Yukon.

### **Plans 1984-85**

With the continued hiatus in activities related to the Alaska Highway Gas Pipeline Project, the NPA has no specific plans for the forthcoming year.

# Northern Transportation Company Limited

## Economic Function<sup>1</sup>

### Year in Review

Northern Transportation Company Limited transported 297,000 tonnes of marine cargo in 1983, slightly less than in the previous year. The most significant decrease occurred, as expected, in the Athabasca sector where traffic was down by 35%. The Mackenzie-Arctic sector was also marginally lower in 1983 as compared to 1982.

Exploration tonnage, both deck and bulk, for the Mackenzie River Delta and Beaufort Sea staging areas was down for the second consecutive year, due largely to increased competition from the West Coast, mainly by the exploration companies themselves.

Decreases in exploration tonnage to the Delta and the Beaufort Sea in 1983 were substantially offset by the movement of large quantities of cargo to Norman Wells related to the construction of a crude oil gathering system, drilling islands and the pipeline to Zama Lake, Alberta. In excess of 37,000 tonnes of deck cargo to Norman Wells and vicinity, including processing plant modules, drill rigs and supplies, and approximately 11,000 tonnes of transmission pipe was transported.

The Company also installed floating docks at the various construction sites and discharge and stockpiling operations were performed. Increased activity and persistent low water levels in the Norman Wells area necessitated the activation of a small vessel, the M.V. Radium Miner, for use as a yarding tug.

Ice and unfavourable weather generally delayed the commencement of operations in the Keewatin. The M.V. Keewatin left Churchill on July 20 for the first trip of the season, almost ten days later than normal. In spite of the late start, all cargo was delivered and the marine equipment was returned to home port for deactivation by October 8.

Increased demand for bulk petroleum products resulted in a 25% increase in tonnages in the Keewatin over the previous year.

Operations in the Athabasca sector began with a voyage from Fort McMurray to Fort Chipewyan on May 29. By October 2, all cargo had been delivered and the Company's one remaining vessel, the M.V. Radium Trader, was deactivated at Fitzgerald. She will be transferred to the Mackenzie system early next spring.

The Company's Athabasca service was discontinued at the end of the 1983 operating season, after almost fifty years of shipping out of Fort McMurray.

The Company inaugurated its new operations in 1982 and 1983 at the request of the Minister of Transport, but without the mining operations of Uranium City or any prospect of other industrial activity in the area, it was obvious that the traffic requirements of small communities such as Fort Chipewyan, Fond du Lac, and Stony Rapids could not sustain a viable service.

The Company inaugurated its new accommodation facility in Tuktoyaktuk in 1983. The new camp, named Ibiuk, which means "twin pingos", was officially opened by Mayor Vince Steen of Tuktoyaktuk on August 19. It provides comfortable and pleasant accommodations for the Company's employees based in Tuktoyaktuk and is a marked improvement over the previous facilities.

NTCL constructed a new terminal office in Hay River, conveniently located between the terminal entrance and the loading basin. The building offers vastly improved facilities for recruitment and training as well as modern shore and marine operations offices.

The introduction of new standards and procedures relating to fire detection and extinction, safety, oil pollution prevention, and handling of dangerous goods has necessitated the commitment of substantially more time and resources to training and upgrading equipment.

In May, the Company held a dangerous goods and oil spill control training course at Hay River. Seventy-six persons successfully completed the course. The course emphasized the need for a high degree of cooperation between industry and regional and local emergency response services in dealing with dangerous goods and contaminants.

### Outlook

Initial tonnage projections for 1984 indicate a 14% decrease. Traffic is forecast to increase slightly in each of the two following years but not sufficiently to return to 1983 levels. There are several reasons for this less than optimistic outlook.

Recent pronouncements by industry and government leaders suggest that the oil and gas exploration activity in the Western Arctic will maintain its current momentum. However much comfort the stabilization of exploration activity may provide, it is also true that competition has increased significantly in recent years.

In consequence, a far greater effort is now required to retain share of market.

The West Coast resupply route to the Beaufort Sea will undoubtedly continue to be used to resupply large quantities of bulk petroleum product to the Western Arctic. Some erosion of deck cargo from the Mackenzie barging system is also inevitable, as was the case in 1983.

During the past two years, the Norman Wells island building and pipeline projects have served to offset to some extent the losses of cargo to the West Coast route, but these projects are nearing completion and no other major undertakings are anticipated within the next few years to bolster tonnages.

In 1984, Northern Transportation will be celebrating its fiftieth year of operation. In many respects, it will be a time for rejoicing and for reminiscing with pride about the past. It will also be a time to plan for the future, to turn obstacles into rewarding challenges.

<sup>1</sup> NTCL expenditures are not included in the Economic Function table of Annual Northern Expenditure Plan. However a financial summary is provided as an Appendix to that document.

# Public Service Commission of Canada

## Economic Function: General Government Services

### **Responsibilities**

The Public Service Commission of Canada (PSC), a central agency accountable to Parliament for the administration of the *Public Service Employment Act* (PSEA), ensures that the merit principle is upheld in staffing actions. The PSC develops and administers standards for selection of candidates for positions in the Public Service; exercises regulatory powers to carry out and give effect to the PSEA, such as determining processes of personnel selection to ensure that the best interests of the Public Service are protected; provides and operates redress mechanisms regarding appointments to ensure that the merit principle is respected; and audits the manner in which staffing authority has been exercised.

The Commission administers the *Act* as it relates to the political activities of public servants, ensures equality of access to the Public Service for all Canadians, conducts and gives advice on training and development programs, and investigates discriminatory practices in the Public Service.

### **Review 1983-84**

The Staffing Branch of the Public Service Commission, which has been fully operational in the Northwest Territories and the Yukon for over five years, continued to provide a full range of staffing services to federal departments operating north of 60°.

In 1983/84, the district staffing offices in Yellowknife and Whitehorse carried out recruitment activities within the provisions of the Staffing in the North policy with satisfactory results. Most appointments went to northern residents. The district offices provided employment information and counselling services to northern residents seeking career opportunities in the North.

### **Indigenous Participation Programs**

#### **Review 1983-84**

The Indigenous Participation Programs continued to promote native employment and development in the north through the Office of Native Employment and the Northern Careers Program.

Native Employment coordinators located at district offices in Whitehorse and Yellowknife have a mandate to increase representation of native people at all levels in the Public Service. The success of this program rests primarily on public service managers, and for this reason, continuous efforts have been made to increase managerial awareness of government policy on native participation and to recruit native people to the federal Public Service.

The Northern Careers Program prepares northern native people for responsible positions in the federal Public Service in the north through individualized training and development programs of up to 24 months. The program is presently administered from Whitehorse and Yellowknife.

Since its establishment in 1974, over 350 northern native people have participated in the program. At December 1983, 58 native people were participating in the Program.

In July 1983, Treasury Board approved a new resourcing strategy to increase yearly participation in the program from 58 to 91 participants. Over the next two years, the program will be so modified that departments providing on-the-job training opportunities for participants will share equally with the Commission the cost of person-years and salaries of participants. The Commission received additional resources for the establishment of a third office in the eastern Arctic.

### **Plans for 1984-85**

The Northern Careers Program will improve its service to the eastern Arctic by opening an office in Frobisher Bay in the fourth quarter of fiscal year 1984-85.

The Office of Native Employment will continue its efforts to increase participation of native people in the federal Public Service.

# Public Works Canada

## Responsibilities

Public Works Canada (PWC) is the largest construction and real property management organization in Canada. PWC provides a wide variety of architectural, engineering and construction services to other Government departments and agencies. It assists in planning and design work, investigating possible building sites and carrying out feasibility studies. The Department is also responsible for constructing and managing buildings, public utilities, highways, harbours and wharves. It also acquires and disposes of land and properties. In addition, PWC leases premises for the Government of Canada and supervises the renovation, maintenance and management of government buildings.

In the North, the Department is involved in housing and transportation. It provides accommodation for federal government employees and designs, constructs and maintains the ever-expanding highways system in the Yukon and the Northwest Territories. Through its dredging activities, PWC also keeps water transportation routes navigable in the North.

## Western Region

### *Highway Construction Activities in 1983-84*

## Economic Function: Transportation

Highway construction was completed on the Liard Highway and on October 1, 1983 maintenance responsibilities were transferred to the Government of the Northwest Territories.

The superstructures on four concrete/steel bridges were completed during the summer and the bridges were opened to traffic. As well, trimming was completed on 50 kilometres of highway and surface reconditioning and application of crushed gravel was completed on 220 kilometres. Total construction expenditure was \$2,700,000.

On the Mackenzie Highway a multiplate culvert failure was repaired at a cost of \$380,000 and gravel crushing was near completion at year end at a cost of \$400,000. Design of 15 kilometres of road in the vicinity of Wrigley was also completed.

The test embankment constructed in April, 1982 on the Inuvik-Tuktoyaktuk Highway was extended in April, 1983 and further monitoring of the section continued to assess the suitability of high ice content fine grained material for use in road construction.

### **Planned Highway Construction Activities in 1984-85**

The Liard Highway will be officially opened on June 23, 1984. The only activity planned for the highway is hydro seeding of erosion susceptible areas and guiderail repairs.

On the Dempster Highway a contract is planned to proceed with a grade revision in the vicinity of kilometre 472. This grade revision is being done in order to alleviate snow accumulation problems in one right-of-way rock cut.

Pre-engineering survey and design work will begin again on the Inuvik-Tuktoyaktuk Highway. This will involve about one month of field work to survey revisions. The remainder of the time will be spent on completion of plans.

Treasury Board approval was received on March 29, 1984 to continue work on the Mackenzie Highway between Fort Simpson and Wrigley. It is expected that during this fiscal year construction will begin from Km 680 to Km 693 and on the Wrigley Access Road.

The estimated expenditure on the Northern Roads Program for 1984/85 is \$2,600,000.

## *Marine Projects*

### **Review 1983-84**

Maintenance dredging on the MacKenzie River Waterway was carried out at a cost of \$1,300,000.00.

Routine maintenance was continued on the public wharves throughout the MacKenzie system at a cost of \$86,000.00.

### **Plans 1984-85**

Maintenance dredging and maintenance of public wharves in the N.W.T. will continue under the direction of Transport Canada.

## Pacific Region

### **Review 1983-84**

#### *Alaska Highway (Maintenance)*

Routine maintenance on the Yukon portion of the Northwest Highway System (NWHS) continued under the terms of a joint agreement with the Government of Yukon. The maintenance program amounted to \$12 Million, and included the application of some 158 km of bituminous surface treatment (a mixture of emulsified asphalt and crushed aggregate blotter).

#### *Alaska Highway (Capital)*

Capital program expenditures during 1983-84 accounted for almost \$12 Million in the Yukon. Among the major projects undertaken during the course of the year were:

#### KM 1273-1292:

Project Description - Grading, culverts & base course  
83-4 Expenditures - \$3.6 Million  
% Complete - 70%

#### KM 1308-1323:

Project Description - Grading, culverts & base course  
83-4 Expenditures - \$4.4 Million  
% Complete - 100%

#### KM 1508-1522:

Project Description - Grading, culverts & base course  
83-4 Expenditures - \$1.5 Million  
% Complete - 40%

In addition to standard capital and maintenance program activities, a further \$260,000 were expended on four separate right-of-way clearing projects funded through the federal New Employment Expansion and Development (NEED) Program.

### Plans 1984-85

Although the capital budget approval has not been finalized as of this writing (4 April 84), it is anticipated that capital expenditure will approximate \$13 Million. Major construction activities to be undertaken will include:

KM 1273-1292:

Project Description - Grading, culverts & base course

84-5 Expenditures - \$1.5 Million

KM 1323-1346:

Project Description - Grading, culverts & base course

84-5 Expenditures - \$4.0 Million

KM 1508-1522:

Project Description - Grading, culverts & base course

84-5 Expenditures - \$1.0 Million

KM 1588-1603:

Project Description - Grading, culverts & base course

84-5 Expenditures - \$3.2 Million

### Work undertaken on behalf of other Government Departments

*Department of Indian and Northern Affairs (DINA)*

#### Review 1983-84

DINA spent on the order of \$2.4 million on northern road construction in Pacific Region. These expenditures were distributed over the Dempster Highway, the Canol Road, the Nahanni Range Road, and the Liard Highway. The largest single category of expenditure involved approximately \$1 million for geotechnical and design work on the Canol Road.

### Plans 1984-85

DINA Highways budget is currently forecast at almost \$4.5 million. Much of this will be directed to the Canol Road upgrading, including approximately \$1.2 million for geotechnical and design work, plus some \$2.3 million for grading and drainage activity between kilometre 255 and kilometre 265. A further \$1 million will be applied to bridge construction on the Dempster Highway.

### Parks Canada

#### Review 1983-84

Preliminary work on the establishment of an all terrain vehicle track into Kluane Park's Kaskawulsh Glacier accounted for \$30,000.

### Plans 1984-85

Forecast project expenditure amounts to about \$410,000.

### Work undertaken on behalf of other governments

#### Shakwak

The Shakwak Program, involving the re-construction of the Haines Road between Haines, Alaska and Haines Junction, Y.T. and onward to Beaver Creek at the Alaska - Yukon Border, has been affected by funding uncertainties in recent years. The project is being sponsored and funded by the United States, although capital expenditures on the Canadian portion of the road are being managed by PWC.

#### Review 1983-84

Almost \$300,000 was spent on capital works on the Shakwak.

### Plans 1984-85

American authorities released some \$11 million (U.S.) to be applied to capital construction activities during 1984-85 and 1985-86 of this total, approximately \$6 million (CDN.) is scheduled to be spent in 1984-85 for the purpose of grading, providing drainage, and laying down the base course between KM 96 and KM 123.

### Western Region

### Economic Function: General Government Services

#### Review 1983-84

Projects carried out for Health and Welfare Canada include:

- Renovations to the Nursing Station in Aklavik at a cost of \$800,000.
- Construction of a new Nursing Station in Fort Norman at a cost of \$900,000.
- Construction of a new Nursing Station in Fort Wrigley at a cost of \$900,000.
- Mechanical Renovation in the General Hospital, Inuvik at a cost of \$200,000.
- Preparation of the Design and Working Documents for the construction of new Nursing Stations in Sachs Harbour and Snowdrift.

Projects carried out for Indian and Northern Affairs include:

- Construction of a new District Operational Office Building in Yellowknife at a cost of \$600,000.
- Preparation of the Design and Working Documents for a new District Operational Office Building in Fort Smith.
- Preparation of the Design and Working Documents for the new Government of Canada Building in Fort Smith for PWC.
- Preparation of Tender Documents and Tender Call for the Construction of Aircraft Hangars in Inuvik and Resolute Bay for Environment Canada.

**Plans for 1984-85**

Projects to be carried out for Health and Welfare Canada include:

- Construction of a new Nursing Station in Sachs Harbour at a cost of \$1,500,000.
- Construction of a new Nursing Station in Snowdrift at a cost of \$1,500,000.
- Construction of a new Nursing Station in Arctic Red River at a cost of \$200,000.
- Preparation of the design and working documents for new Nursing Stations at Lac La Martre, Palatuk, Tuktoyaktuk, Fort Liard.

For Indian and Northern Affairs, construction of a new District Operational Office Building in Fort Smith at a cost of \$750,000 is planned.

For Environment Canada, construction of new Aircraft Hangars in Inuvik and Resolute Bay at a cost of \$6,000,000, will be carried out.

For Public Works Canada, construction of the new Government of Canada Building in Fort Smith at a cost of \$4,000,000 is scheduled.

**Other Construction**

Two new RCMP married quarters in Tuktoyaktuk and one in Ft. Providence were constructed for \$360,000 and \$152,000, respectively. A garage/workshop/warehouse in Spence Bay; a garage/workshop in Rae and an emergency generator in Inuvik are under design for construction in 1984. New married quarters in Sachs Harbour are in design for construction in 1985.

**Pacific Region****Accommodation****Review 1983-84**

A new Customs facility and residence at Beaver Creek (Yukon - Alaska Border) was opened. Total cost exceeded \$1.4 million. Beaver Creek, the major highway crossing between Yukon and Alaska, is exceptionally busy in summer.

**Plans 1984-85**

Renovations to the Government of Canada Building in Whitehorse costing in the order of \$250,000 will begin. Replacement of the current steam boiler operation at the Takhini Office Complex costing over \$300,000, will result in greater labour and energy efficiency.

**Other Government Departments - Capital****Review 1983/84****Health and Welfare Canada**

A new Health Centre at Carmacks was completed at a cost of \$359,000.

**Plans 1984-85**

Work on nurses residences at Dawson City and Watson Lake will be well underway total value exceeds \$900,000.

**RCMP**

A new detachment will be constructed at Mayo valued at more than \$490,000.

# Department of Regional Industrial Expansion

## Economic Function: Economic Development – Other

### Responsibilities

The federal Department of Regional Industrial Expansion (DRIE) is mandated to:

- stimulate national economic growth;
- reduce regional disparities through leverage of investment;
- promote industrial development and trade; and
- enhance the competitiveness of Canadian industry in world markets.

The primary objective of the Department, therefore, is to increase overall industrial, commercial and tourism activity in all parts of Canada and in the process, reduce economic disparity across Canada.

Further, the Department fosters a climate which encourages firms to be more internationally competitive.

### Programs

#### 1) Industrial Regional Development Program (IRDP)

Joining the Department of Industry, Trade and Commerce (ITC) and Regional Economic Expansion (REE) allowed for an extensive review of the financial assistance programs that were previously managed separately. Of major importance has been the creation of the Industrial and Regional Development Program (IRDP) which takes the best features of several former ITC and REE programs, adds a number of new elements and has greater flexibility. Although it is a national program, it is especially sensitive to the more economically disadvantaged regions of Canada.

This key instrument, the IRDP, is the government's principle means to deliver direct federal assistance to industry.

Manufacturers, processors, certain tourism operators in all of Canada are eligible. Four tiers of assistance are offered on a progressively increasing basis with the greatest support available in the most economically disadvantaged areas of the country.

IRDP has a streamlined delivery mechanism and has decentralized decision-making in the case of smaller projects. This will increase the availability and usefulness of the program for small and medium-sized businesses. The elements of the program can be applied to reflect local opportunities in each region.

Intended to support private sector initiatives, IRDP is aimed at projects, industries and technologies with the greatest potential for economic return, sustained growth and international competitiveness.

IRDP responds particularly to the needs of small and medium-sized businesses and complements other federal programs and the Federal Business Development Bank. IRDP features of particular interest to such firms include:

- a simpler, more flexible program structure;
- regionalized decision-making and program delivery for many projects;
- eligibility for assistance by unincorporated entities;
- broader support for consultant's studies and venture capital searches;
- access, for small businesses, to innovation assistance for projects involving new products but not substantial risk;
- support for marketing initiatives; and
- for certain non-profit organizations, assistance to support manufacturing and processing operations, and certain tourism operations.

#### a) Program Elements

Many worthwhile projects fail because assistance is not available at a specific stage in their growth. IRDP addresses this problem by providing a range of financial support including grants, contributions, repayable contributions, participation loans and loan guarantees over all the phases of a typical corporate production cycle. The elements of the program are:

- industrial development climate;
- innovation;
- modernization/expansion;
- marketing; and
- restructuring.

Since the assistance required depends on the nature of the project and the need for support, the program flexibility will enable this assistance to be tailored to the particular circumstances of the applicant.

#### b) Regional Designation

While the program is a national one, and support is available for all areas, not all areas of Canada enjoy the same economic prosperity. Accordingly, to further encourage and stimulate industrial activity in the more economically disadvantaged areas and to reduce the disparity between regions, enriched support is available to those more disadvantaged regions. Targeting support is achieved through the use of a "development index", based on a formula using Canadian government statistical data.

There are four tiers of assistance with Tier I representing a basic national level support. Tiers II, III and IV provide progressively more assistance. The designation of Yukon and the Northwest Territories under Tier III forms part of the basic legislation on the IRDP and as a result the designation of the Territories will not be subject to annual review.

#### 2) Program for Export Market Development (PEMD)

The Program for Export Market Development (PEMD) helps incorporated Canadian businesses to develop, increase and sustain their activities by sharing with them the costs of specific export marketing efforts. PEMD is geared to:

- encourage businesses that have not exported previously to begin export marketing; and
- encourage established exporters to expand their activities in new markets.

PEMD provides up to 50 percent of the costs incurred by a company in its penetration of new markets. These contributions are repayable if sales are made to that market.

The Program for Export Market Development has various sections, each designed to meet a specific circumstance which may result while developing or expanding new or existing export markets.

### 3) Other Programs

The Department also provides assistance in the North under regional specific programs such as the Special Agricultural Rural Development Agreements (Special ARDA), the Yukon Tourism and Small Business Incentives Program, as well as under the instrument of the Economic Development Agreements through Subsidiary Agreements. Information on these Agreements is available through the DRIE Whitehorse or Yellowknife offices.

### Northwest Territories

#### Review 1983-84

A continuing high level of activity was evident under the Special Rural Development Agreement (Special ARDA), signed in 1977 and extended until March 31, 1984. This affirmative action program is directed to native peoples of the NWT and provides financial and other assistance for the development of business and employment opportunities and the improvement of socio-economic circumstances.

The 595 applications for funding received since program inception in 1977 to February 1984 resulted in 362 accepted offers involving a commitment of approximately \$15.3 million, with 10,745 people assisted and 435 direct jobs created.

The Canada/NWT Economic Development Agreement (EDA) (successor to the General Development Agreement) became operational with the establishment of an EDA Secretariat to process applications under the Domestic Market Development and Natural Resource Development Subsidiary Agreements. Under the Domestic Market Development Subsidiary Agreement, five applications for a total amount of \$112,085 were approved under the Business Assistance Program, three applications for a total amount of \$253,695 were approved under Tourism Development and three applications for a total amount of \$146,800 under Community Based Economic Development, bringing the total funding approved to \$512,580. Awareness of the EDA continues to increase, as evidenced by the number of applications coming to the EDA Secretariat.

The EDA Domestic Market Development Subsidiary Agreement Programs are available subject to eligibility requirements, to all residents of the NWT.

The Regional Development Incentives Program (RDIA) was phased out December 1983, however, activity up to that time resulted in seventeen applications of which six were accepted for a commitment of \$302,000 with authorized capital costs totalling \$1,056,000 and the creation of fifty-four direct jobs.

With the amalgamation of the Department of Industry, Trade and Commerce and Department of Regional Economic Expansion into the Department of Regional Industrial Expansion, IT&C programs that were formerly provided from Edmonton are now available to NWT residents from Yellowknife.

The major DRIE national program, the Industrial and Regional Development Program (IRDP), has been available to residents of the Northwest Territories since June 1983. To date four applications have been received and two have been approved under this program for a total of \$72,375 with an expected 6 jobs created and direct investment generated totalling \$217,000.

The Program for Export Marketing Development (PEMD) is also available to NWT residents and is jointly offered through DRIE and External Affairs.

#### Plans for 1984-85

To satisfy the departmental objectives of increasing overall industrial, commercial and tourism activity in all parts of Canada and in the process reduce economic disparity, the NWT regional office will direct its future efforts in the following priority development areas:

- a) Commercial Development
  - i) Native entrepreneurial development; and
  - ii) other small business
- b) Tourism Development
- c) Major Project Benefits
- d) Export Market Development/Import Replacement
- e) Industrial Development

### Yukon

#### Review 1983-84

The focus of activities by the Department of Regional Industrial Expansion (DRIE) was to increase overall industrial, commercial and tourism activity in Yukon. About \$2.6 million was invested by DRIE under a variety of programs to increase economic and employment opportunities.

The Canada, Yukon Tourism and Small Business Incentives program (YTSBIP) was initiated in May 1983 as a federal mechanism for the planning, development and promotion of tourism accommodations, services and attractions to strengthen Yukon's competitive position as an international tourist destination. The program also allowed for a continuation of the programming which had been started under the Canada Yukon Interim Tourism Development Subsidiary Agreement (CYTA) which expired on March 31, 1983. The program provided \$2.2 million over one year to stimulate investment in the tourist industry. As of March 1, 1984, DRIE has contributed approximately \$2 million to a total of 42 projects.

Demand continued for assistance to native businesses from the Special ARDA program. The program is very highly regarded by native people at the community level who feels involved in the operation of the program through the Special ARDA advisory committee.

Special ARDA is a joint federal/territorial program which provides financial support and technical assistance to projects which will open up new and better economic opportunities, create jobs and improve incomes for people of Native ancestry throughout Yukon. The two-year extension of Special ADA (1982-84) expires on March 31, 1984.

In 1983-84, DRIE's contribution to this program totalled \$1.46 million for 40 commercial, primary producing and social adjustment projects. Since the program was initiated in 1978, DRIE has committed approximately \$4.8 million to 133 Special ARDA projects.

Since June 1983, assistance to stimulate industrial and regional economic development has been available under the new Industrial and Regional Development Program (IRDP) with the territory being designated as a Tier III region. Since the program began, one Yukon business has accepted an offer of financial assistance in the form of a contribution from IRDP. DRIE will contribute \$47,119 representing 37.5 percent of total capital costs estimated at \$125,650 to establish a new bakery in Whitehorse.

The Regional Development Incentives Act (RDIA) which was available in Yukon from 1978 to December 1983 provided financial support in 1983 amounting to a total of \$57,435 to establish a log cabin manufacturing business in Yukon. Under the RDIA, DRIE offered non-repayable grants to qualifying enterprises to establish, expand or modernize manufacturing or processing facilities. Since the program was initiated, grants totalling \$1.98 million have been accepted for seven projects in Yukon. The projects were expected to create approximately 75 new jobs.

The Program for Export Market Development (PEMD) is funded by the Department of External Affairs and delivered by both the Department of External Affairs and Regional Industrial Expansion. DRIE regional offices are processing all applications concerning market identification trips, participation in trade fairs abroad and incoming visits for foreign buyers. PEMD helps Canadian businesses to begin export marketing or to expand their activities in new markets by offering incentives which are repayable from export sales. In 1983-84, one repayable contribution totalling \$2,479 has been made to help a small Whitehorse company explore new markets in Alaska.

### ***Plans for 1984-85***

The first priority will continue to be programs aimed at reviving the Yukon economy by increasing overall industrial, commercial and tourism activity in Yukon. DRIE's efforts will be directed to the following priority development areas: tourism, commercial development, including native business development and other small business enterprises; major regional projects; export market development and import replacement, and industrial development.

Program activities in the Yukon will depend in part on the proposed Economic Development Agreement now being negotiated. DRIE anticipates the Agreement will be finalized before the end of 1984.

A new Tourism and Small Business Development initiative as a successor to the CYTA and YTSBIP is now being planned by DRIE under the proposed Economic Development Agreement in order to permit continued programming in these important sectors of the Yukon economy.

The extension of Special ARDA beyond its March 31, 1984 expiry date is presently under review.

Increased activities under IRDP and PEMD are also expected.

## Customs & Excise

### Economic Function: General Government Services

#### Responsibilities

Customs controls the international movement of goods, persons and conveyances and collects duties and taxes on imports.

Excise administers the provisions of the Excise Tax Act, the Excise Act, the Importation of Intoxicating Liquors Act and related regulations. The branch issues licences, provides tax information and audits the records of businesses subject to payment of federal sales and excise taxes.

#### Review 1983-84

#### Yukon

As the Yukon Territory is serviced by all modes of transportation, the import and export of goods and the international movement of travellers is readily achieved. For example, a fairly significant requirement for Customs clearance of vehicular and passenger traffic originating from Alaska exists.

The co-ordination and control of Customs activities in the Yukon rests with the Manager, B.C. and Yukon Operations, Pacific Region. The operational structure comprises the area port of Whitehorse, highway Customs ports of entry at Beaver Creek and Pleasant Camp, and three seasonal offices at Little Gold, Fraser and Dawson City. Customs services are also provided by the R.C.M.P. at Old Crow.

At Whitehorse, Customs clearance is provided for goods and passengers arriving by highway, air and rail. Service is provided at four sufferance warehouse operations. Postal parcels arriving from abroad are also processed at this location.

Excise carries out its responsibilities in the Yukon by means of periodic visits by Excise auditors to the 34 businesses licensed under the Excise Tax Act. Excise auditors conduct audits, provide tax information and, as required, assist in the processing of refund claims.

#### Northwest Territories

Customs personnel in the Northwest Territories are stationed at Frobisher Bay on Baffin Island and at Inuvik. Customs coverage has also been extended to include forty-four other locations where representatives of other government departments are empowered to act on

behalf of Canada Customs. The Customs functions performed at these sites vary significantly from one locale to another.

Frobisher Bay is staffed by one full-time Customs Inspector reporting to the Ottawa Region. This Inspector's responsibilities in 1983-84 ranged from the clearance of commercial air freight, aircraft and passengers to the processing of dutiable postal parcels and the control of a sufferance warehouse facility. The Customs operation at this site has been highly successful in terms of expediting the clearance of goods and people.

Inuvik is staffed by one full-time Customs Inspector reporting to the Alberta Region, whose primary duties involved the acceptance of reports inwards and outwards of small aircraft and the clearance of passengers and their possessions. Most of this traffic consisted of charter flights originating in Alaska.

Although the R.C.M.P. provide Customs coverage at 38 locations in the Northwest Territories, they have been called upon to perform administrative functions regularly on behalf of Customs & Excise at only a handful of these sites, outlined below, under the direction of Customs Headquarter's personnel. Customs service in the Northwest Territories is also provided by representatives of other government departments, in their capacity as "Acting Customs and Excise Enforcement Officers", at the sites indicated below:

#### *Royal Canadian Mounted Police*

Tuktoyaktuk  
Nanisivik  
Resolute Bay

#### *Department of National Defence*

Cape Dyer  
Cape Parry  
Hall Beach

#### *Department of Environment*

Eureka  
Mould Bay

#### *Department of Transport - Canadian Coast Guard* Little Cornwallis Island

The international movement of goods, people and conveyances in the North increased in 1983-84 and, in view of the

current high level of economic and political interest in the region, this trend can be expected to continue for the foreseeable future. The emphasis remained on offshore oil and gas exploration and, throughout the year, the "Legislation Implementation Group" project team continued its examination of all Customs functions pertaining to the handling of offshore drilling equipment.

A Notice of Ways and Means Motion (now Bill C-16 - Customs and Excise Offshore Application Act) was introduced in the House on June 29, 1983 and has the effect of extending Customs and Excise jurisdiction to the outer edge of the continental shelf or 200 nautical miles, whichever is the greater.

Effective June 30, 1983, designated goods such as drill ships, artificial islands, service vessels, apparatus and consumables of all sorts, became subject to the laws and regulations relating to Customs and Excise, including the Customs Act, Customs Tariff, Excise Tax Act, Excise Act and the Anti-Dumping Act.

Certain exemptions are provided in this proposed legislation for oil and gas industry operators who had vessels and equipment on site or on order on the effective date. The coastal shipping industry is also addressed in the Act with provisions to safeguard the interests of operators with vessels on site which were engaged in the coasting trade of Canada or were on order when the proposed Act came into force.

Despite increased business activity, the headquarters of most business firms operating in the Northwest Territories who are Excise licensees are located outside the territories. There are, however, 20 Excise licensees in the Northwest Territories. Excise officers make visits to such communities as Yellowknife and Fort Smith to conduct audits, process refund claims and provide tax information.

#### **Plans for 1984-85**

Yellowknife is the only territorial/provincial capital in Canada without Customs service. Customs will be placing officers in Yellowknife this year to accommodate the Arctic Winter Games. A Customs office may be established in Yellowknife.

The introduction in 1983 of new legislation extending Customs and Excise jurisdiction to the continental shelf or 200 miles, whichever is the greater, has necessitated a greater presence in the North. Accordingly, Customs intends to position a Customs Officer in Tuktoyaktuk during the summer season.

# Royal Canadian Mounted Police

## Economic Function: General Government Services

### "G" Division

#### Northwest Territories

#### Responsibilities

The Royal Canadian Mounted Police, "G" Division, provides policing services in the Northwest Territories under contract to the territorial government. These services encompass both federal and territorial police responsibilities with headquarters in Yellowknife.

#### Review 1983-84

The overall crime rate rose during this period by 10%. All criminal code categories of offense increased, the largest being a 20% increase in crimes against persons. Crimes against property were up by 5%, and the remainder of offences against the criminal code rose by 11%. Most of the serious crimes occurring in the Northwest Territories continue to be related to alcohol abuse, and increased participation in alcohol and drug abuse programs is a current priority.

"Nanook", the RCMP safety bear, proved to be an outstanding medium of communication/education with the youth in the north. Messages of crime prevention, safety, and lifestyles, were effectively transmitted to young people.

Efforts continued in 1983-84 to recruit native people. A large number of persons were processed and three special constables were engaged for placement in the Baffin Island region. One, a woman, is the first female to so serve in the Northwest Territories. While there are currently few vacancies in the existing special constable establishment, recruiting efforts are continuing with the objective being to establish a waiting list. Thus, ready resources will be available when vacancies occur or establishment increases are obtained. Fifteen positions for native people constables exist throughout the division.

\$750,000 was spent on new construction during the past year to provide new facilities for personnel and to replace old buildings. In addition, \$160,000, was spent in a continuing program of energy efficiency upgrading on several units.



"Nanook", The R.C.M.P. "Safety Bear"



Insp. R.T. BYAM congratulates Special Constable Mary HUNT upon being engaged into the Force. Constable Hunt is the first female Inuit Special Constable.

#### **Plans 1984-85**

New construction in the coming year will be limited to new detachments at Pond Inlet and Igloodik, married quarters at Pond Inlet, and the secure bay for the Frobisher Bay detachment.

Energy retrofits and/or storage modules are planned for married quarters at Fort Rae, Cambridge Bay, Spence Bay, Rankin Inlet, Eskimo Point, and Pangnirtung.

#### **"M" Division**

*Yukon*

##### **Responsibilities**

The Royal Canadian Mounted Police "M" Division provide all policing services to the Yukon Territory. Under contract to the Territorial Government, the RCMP enforce the provisions of the Criminal Code and the Territorial Acts. Through contract and non-contract personnel, the RCMP is also responsible for the enforcement of various Federal Statutes and Regulations.

With its Divisional Headquarters in Whitehorse, present strength is 119 Regular Members (including 20 Special Constables), 7 Civilian Members and 17 Public Service Employees. Detachments are located at Old Crow, Dawson City, Mayo, Beaver Creek, Carmacks, Whitehorse, Carcross, Teslin, Watson Lake, Faro, Ross River and Haines Junction. One Sub-Detachment is located at Pelly Crossing.

##### **Review of 1983-84**

The number of non-traffic Criminal Code Offences decreased 16 percent over the previous year, while Federal Offences decreased 19 percent.

Criminal Code traffic offences increased by 11 percent, and Territorial traffic offences also increased by 11 percent. The total number of reportable traffic accidents decreased by 216, from 1,220 in 1982 to 1,004 in 1983. There were 11 traffic fatalities in 1983; 8 in 1982.

The Native Policing Program for the Yukon Territory was increased from nine to thirteen positions. During the year, five Native Special Constables (3 female, 2 male) were taken on strength, while two (1 female, 1 male) resigned. As of March 31, there were 11 Native Special Constables on strength.

During the year, a new office building, with cells, was constructed for Pelly Crossing Sub-Detachment, and an existing house in Carmacks was purchased to provide living quarters.

##### **Plans for 1984-85**

A new Detachment building will be constructed at Mayo, with completion scheduled for February, 1985. Additional living quarters will be purchased at Watson Lake (2 units), Haines Junction (1 unit) and Dawson City (1 unit).

It is expected that two new Native Special Constables will be hired to fill existing vacancies.

# Secretary of State of Canada

## Official Languages in Education

### Economic Function: Education

#### Responsibilities

The program provides assistance to provinces and territories for the development and maintenance of minority official-language education (English in Quebec, French elsewhere) and second official-language instruction (English in Quebec, French elsewhere).

#### Review 1983-84

The territorial governments signed three-year bilateral agreements with the Department of the Secretary of State for the official languages program in education commencing in 1983-84. The total allocation for 1983-84 was \$370,000.00. In the Northwest Territories, \$180,000 was provided for the following:

- fellowships for post-secondary students;
- full-time monitors to assist French language teachers;
- French coordinator;
- text books and other resources materials for teaching French;
- French language assistants;
- French immersion programs;
- in-service training for French second-language teachers;
- bursaries to French second-language teachers.

In the Yukon, \$190,000 for French second-language programs was used for:

- French immersion classes in Whitehorse;
- the salary for a full-time coordinator of French courses;
- full-time French-language monitors
- support for the expansion of in-service training program and career development programs for teachers;
- support for post-secondary students to pursue their education at a francophone or bilingual institution.

Payments for Official Languages in Education at the elementary, secondary and post-secondary levels for the province of Quebec are printed in the annual publication "Federal-Provincial Programs and Activities - A Descriptive Inventory".

#### Plans for 1984-85

The Department will continue to provide assistance towards the official languages programs in the Yukon and Northwest Territories in accordance with the bilateral agreements.

## Citizenship Program

### Economic Function: Culture & Recreation

#### Responsibilities

The prime objective of the Department of the Secretary of State is to create a sense of belonging among Canadian citizens. Non-financial support is an important element in the Department's strategy. Such assistance comes in the form of face to face contact with departmental social development officers and the consequent transfer of organizational, problem solving, and evaluation skills to individuals who make up voluntary organizations.

The Department's offices in the Yukon and Northwest Territories receive requests from voluntary associations for technical advice, assistance and grants in support of various community activities. For example, the Department encourages the participation of ethnocultural groups in the mainstream of Canadian society while preserving their cultural heritage, and also the preservation of official language minority groups' rights and cultural identity within their communities. The Department also encourages the participation of Native people in Canadian society and the development of special projects that respond to special needs as identified by Native people.

#### Review 1983-84

Program services for the Northwest Territories were administered through an office in Yellowknife, reporting to the Alberta Regional Office. Through the Native Citizens' Program, technical and financial support was provided to Native representative organizations, Native women's groups, friendship centres and communications societies. In addition social and cultural development projects and film and slide productions were provided for remote communities. The Multiculturalism Program supported projects that included writing and publications, language teaching aids for Inuit and Indian groups, Canadian Ethnic Studies in Native affairs and Inuit music, and performing and visual art productions. The Canada's Birthday Program supported projects to help Canadians celebrate our national day.

The Quebec Regional Office provided assistance for the production of community television and radio programming for Inuit in northern Quebec. The Avataq Inuit Society received funding through the Native Social and Cultural Development Program for various cultural activities during the year. Funding was also provided to the Inuit Language Commission through the Native Language Retention Program in cooperation with other levels of federal and provincial financing.

Program services for the Yukon Territory were administered through an office in Whitehorse, reporting to the Pacific Regional Office in Vancouver. During the year the office was active with ethnocultural, francophone and women's groups as well as other community associations. Regional staff responsible for Official Language Community Groups have continued to assist the developing Franco-Yukon citizens group seeking to strengthen the Yukon chapter of Canadian Parents for French. Major activity continues through the Native Friendship Centre, Native Women, Native Social and Cultural Development and Native Communications Programs. Further information on services related to Canadian citizenship can be obtained by contacting either the Whitehorse or Yellowknife offices.

### ***Plans for 1984-85***

In the coming year, the following initiatives will be taken in the Northwest Territories:

- Implementation of the Federal Government policy regarding bilingual service in the north;
- Increased support to Native organizations. An additional Native Friendship Centre in Rankin Inlet has been approved for funding beginning April 1, 1984;
- One additional Race Relations officer will be hired for the Yellowknife office;
- Increased funding in support of Native based remote satellite broadcasting.

The Quebec Regional Office will continue to work closely with Native groups in the areas of Social and Cultural Development, Communications and Language Retention.

The Department will continue to offer financial and technical/ professional services in the Yukon Territory to various community associations that are pursuing objectives consistent with Departmental objectives and priorities. The Department will continue to encourage youth exchanges through its Open House Canada Program. It is expected that Official Language Community Groups staff in the Pacific and Alberta Regional Offices will provide increasing technical support in the Yukon and Northwest Territories during the coming year.

### **Human Rights Directorate**

#### **Economic Function: General Government Services**

##### ***Responsibilities***

The Human Rights Directorate operates a secretariat for the Continuing Federal-Provincial-Territorial Committee of Officials Responsible for Human Rights which provides a mechanism for liaison and consultation in matters relating to Canada's international human rights commitments. The Yukon and Northwest Territories regularly send official representatives to the twice yearly meetings of the Committee.

### ***Review 1983-84***

The Secretary of State serves as Chairman of the Federal-Provincial-Territorial Ministerial Conference on Human Rights. Representatives from both the Yukon and Northwest Territories were in attendance at the last conference held in September 1983.

### ***Plans for 1984-85***

The Human Rights Directorate operates the secretariat for the Ministerial Conferences. The next Federal-Provincial-Territorial Conference is being planned for early 1985. The areas of concern and interest to Ministers currently being studied by the Committee of Officials include affirmative action and related special support programs; the development of a plan of action for Canada's participation in the United Nations Decade of Disabled Persons; measures to combat racism; the Teaching of Human Rights; and the development of a common interpretation for the Convention on the Elimination of All Forms of Discrimination Against Women, and the International Convention on the Elimination of All Forms of Racial Discrimination.

# Supply and Services Canada

## Economic Function:<sup>1</sup>

### Supply Administration

#### Responsibilities:

Supply Administration is responsible for purchasing, printing and publishing, advertising management, expositions, traffic management, industrial security, equipment maintenance and repair, warehousing, and distribution of surplus government materials. In 1983-84 the total volume of business transacted by the Administration on behalf of the Government of Canada was in excess of \$6 billion.

The SA also provides limited support to the Yukon and Northwest Territories Governments by providing access to the Stocked Item System and the Maintenance and Repair Service for office machines.

A purchasing office, established in Whitehorse in April 1980, provides acquisition services for Federal departments and agencies programs conducted in the Yukon.

Supply Administration placed over \$13M in contracts with suppliers located in the Yukon and Northwest Territories. This was closely matched by the actual tax dollars spent for goods and services destined for delivery in the North. For eleven months of the last fiscal year, these purchases amounted to over \$14M.

The department maintains source lists of qualified suppliers from which it solicits bids for its contract requirements. With increased regionalization slated for the new fiscal year, it is anticipated that greater opportunities will exist for local suppliers to compete for more of the tax dollars spent in the North. Last year, some 450 northern suppliers obtained contracts placed through Supply Administration.

Purchases of individual commodities in the \$1M category fell into the following groupings:

Food, beverage and tobacco  
Fuel Oils  
Lumber  
Motor Vehicles, Trucks and cycles  
Charters- aircrafts and ships  
Scientific and research services

#### Review 1983-84

Some highlights of our contracting activity in the North follow:

- For Energy Mines and Resources contracts were awarded in connection with two significant projects: air charters to support the Polar Continental Shelf Project, and drilling and logistics support for a Geological Survey of Canada scientific project in the Southern Beaufort Sea.
- For Environment Canada, contracts were awarded in connection with the Baffin Island Oil Spill Program to update initial work done in a 1979/80 controlled oil spill program to determine the effects of the Baffin Island Macrobenthos and the potential shoreline countermeasures.
- For Transport Canada, contracts included projects for updating Arctic Shipping Pollution Regulations and Arctic Marine Transportation - Marine R & D Energy.
- For the Canadian Coastguard, a contract was awarded for a 5-year period for chartered air services in connection with ice reconnaissance activities in the High Arctic.
- For the Department of Fisheries and Oceans, a contract was awarded to Steltner Development and Manufacturing Co., Pond Inlet, N.W.T. for data acquisition at Eclipse Sound and Adams Island to study large scale deformation of sea-ice surface and variations.
- For Health and Welfare, a contract was awarded in connection with the Outpost Nursing Program.
- For the department of Indian and Northern Affairs, contracts were awarded for the Arctic Land Use Research Program and for fire bombing services for the N.W.T.

<sup>1</sup> Supply and Services Canada is *not* reported in Annual Northern Expenditure Plan.

# Transport Canada

## Canadian Air Transportation Administration

### Economic Function: Transportation

The Canadian Air Transportation Administration (CATA) is responsible for the development of a safe and efficient national civil air transportation system that contributes to meeting government objectives. CATA also operates specific elements of this system. The Administration's northern activities include providing airports, air traffic control facilities and services, and navigational aids for domestic and international air routes. The Administration also carries out strategic and master planning for northern air transportation, and budgets for and implements approved projects.

Thus, the Ottawa headquarters gives national direction to the civil air transportation system and develops policies, standards and regulations. Six regional offices are engaged in the day-to-day operation of the system. Three of these offices - Québec, Central and Western are responsible for CATA's northern activities.

#### *Arctic Air Facilities Policy*

The Policy for the Provision of Air Transportation Facilities and Services in the Yukon and Northern Territories, generally referred to as the Arctic Air Facilities Policy, was approved in 1974. The policy, which formally expired on March 31, 1983, provided funding for construction and operation of airports, air navigational aids in the Yukon and Northwest Territories, and also for training of locally hired airport maintenance staff and weather observer/communicators. Under the policy, airports were classified Arctic A, B, or C, as defined by a number of characteristics, with minimum standards established for the facilities and services to be provided to each class of airport. Arctic A airports are major airports which serve larger communities and have scheduled jet aircraft operations. These airports are owned and operated by Transport Canada either directly or under contract. Arctic B and C airports primarily serve the needs of smaller communities and are not generally operated by Transport Canada.



Air Cushion Icebreaking Bow during tests in Thunder Bay.

Of the 62 Arctic airports listed in 1974, 11 were classified as Arctic A and the rest as Arctic B or C. In recent years, expenditures at Arctic A airports have, for the most part, been to restore or replace facilities and equipment. Total capital expenditures to the end of 1982-83 were approximately \$30 million, compared with the financial ceiling approved in 1977 of \$56 million. The current approved capital expenditure level for completing the B and C airports program was \$81 million. Approximately \$60 million had been spent at some 40 sites as of March 31, 1983.

A review of the Arctic Facilities Policy was carried out by Transport Canada. After being reviewed by the territorial governments, federal departments and the aviation industry, a report, released in 1982, suggests that the CATA national airports classification system be extended to the Arctic to replace the current unique classification system; that new airport facilities be provided only to communities more than three hours surface travel time from an airport with regular commercial air services; and that there be more flexibility in determining runway lengths and other airport facilities.

Three options have been developed for the future:

- Let the Arctic Facilities Policy expire;
- Renew the policy with changes for a further six-year period to cover refurbishment and operation of existing airports only; or
- Renew the policy with changes for a further six-year period to cover the construction of new airports as well as the refurbishment and operation of existing airports.

Cabinet is expected to consider the options in early 1984.

The further construction of any new community airports in the Territories is dependent upon formal approval of a new air facilities policy for the Arctic because the 1974 policy authority has expired.

### *Air Navigation Services Activity*

The Air Navigation Services Activity is responsible for providing air navigation services in Canada. The Air Navigation Services Activity includes designating airways/air routes; the operation and provision of their associated facilities and the development of related standards; inspecting and calibrating navigational aids; inspecting runways and manoeuvring areas; designing, constructing, installing, operating and maintaining telecommunications and electronic facilities; providing an air traffic control system for Canada and in the international airspace for which Canada has accepted responsibility through the International Civil Aviation Organization (ICAO); and funding meteorological services in support of aeronautics.

### *Air Traffic Services Branch*

Air Traffic Services continues to provide control services for flights operating under instrument flight rules (IFR) north of 60°, providing an alerting service for aircraft in difficulty and for all overdue aircraft on flight plans or flight notifications. In this area, control zones with established Transport Canada control towers are located at Whitehorse and Yellowknife. In addition, on April 1, 1984, Air Traffic Services assumed responsibility for the management of 19 flight service stations north of 60° from the Telecommunications and Electronics Branch. These stations provide aeronautical communications and related flight services to the northern aviation community.

For air traffic control purposes, the high-level airspace in northern Canada is divided into two control areas; the Arctic Control area, and the Northern Control area. Control services are provided to all flights operating within these areas, using the Arctic and northern domestic high-level airway and route network. In addition, flights with sophisticated self-contained airborne navigation systems are accommodated on Great Circle and minimum time, direct tracks. This IFR Area Control Service is provided by three area control centres located at Edmonton, Winnipeg and Montreal.

To provide for these activities, Air Traffic Services operates an extensive dedicated voice telephone network to locations in the North, along with lateral voice communication between Edmonton, Montreal, Moncton, Frobisher, Chimo, Resolute Bay, Gander and Reykjavik.

In addition, to assist in the movement and control of IFR traffic, the Edmonton Area Control Centre has direct controller to pilot communications through peripheral (PAL) remote transmitting and receiving at Hay River, Inuvik, Norman Wells, Whitehorse and Yellowknife. The Winnipeg Area Control Centre also has a PAL located at Churchill. The flight service stations also have a remote communications outlet capability at Wrigley, Fort Good Hope and Liard River.

In the northern low level airspace, control service is provided to IFR flights operating along designated airways, within selected IFR airports and within control zones without control towers designated around a number of airports for additional protection and improved service. At a number of uncontrolled airports in the north, aerodrome traffic zones are designated to increase the VFR weather limits in an eight kilometre radius to provide protection to IFR aircraft operating into these airports.

### *Facility Engineering and Systems Development Branch*

During the report period, work has continued to implement and enhance air navigation facilities in the north with the addition of two Doppler very high frequency omni-direction ranges with distance measuring equipment (DVOR/DME); the replacement of three non-directional beacons (NDB) in 1983-84 with four more planned for 1984-85; and the installation of a very high frequency direction finding (VHF/DF) facility at Inuvik. The ongoing program to replace and upgrade old power generating units for air navigation facilities results in improved service reliability.

### *Aviation Regulation Directorate*

Aviation activity in the North, as elsewhere in Canada, is regulated by three branches of the Aviation Regulation Directorate:

- 1) Airworthiness;
- 2) Licensing Certification; and
- 3) Enforcement and Legislation.

The Airworthiness Branch is responsible for developing aeronautics legislation; standards and procedures in respect of aircraft maintenance, manufacturing and repair; and inspecting, examining and certifying commercial operators and aircraft.

The Licensing Certification Branch is responsible for developing aeronautics legislation, standards and procedures in respect of aviation personnel, commercial operators and aircraft; and inspecting, examining, licensing and certifying aviation personnel, commercial operators and aircraft. As of December 31, 1983, 417 valid licences and permits were held by persons residing in the Yukon Territory and 630 by persons residing in the Northwest Territories. The departmental Gulfstream II (G-GCFB) aircraft continued to serve on flight inspections of electronic and visual en route and landing/approach aids through the Arctic.

The Enforcement and Legislation Branch is responsible for promulgating legislation, standards and procedures; surveillance, detecting and investigating regulatory infractions; and taking administrative and judicial enforcement action against offenders.

### *Aviation Safety Bureau*

The Aviation Safety Bureau continued to provide passenger safety briefings to federal department staffs who are periodically or permanently working in the North. Increased attention has been given to charter aircraft contracts, passenger safety around fixed-wing aircraft and helicopters, customer/pilot relationships, and survival training.

Aviation safety literature and posters are regularly distributed to northern flight service stations and AES weather offices by Transport Canada regional aviation safety officers (RASO). RASOs conduct safety seminars for associations groups, air carrier staffs and their clients. More emphasis is being placed on consumer education, resulting in better understanding of flight safety considerations and decisions. As a result of this awareness, pilots have reported a significant decrease in client pressure to fly in unsafe conditions.

Greater emphasis has been placed on safety programs related to commercial aviation, particularly among small and medium size carriers, employed under contract or charter in northern operations. More than 350 company pilots have been trained as company aviation safety officers (CASO) to implement in-house safety programs. Additionally, by invitation from a company, the RASOs will conduct a confidential voluntary safety survey to assist in developing or improving its overall safety system. This new system has been enthusiastically received by the aviation community.

The bureau encourages the reporting of non-accident occurrences to identify deficiencies before accidents occur. More bureau resources have been allocated to investigation of incidents, hazards and safety advisory services. This approach is compatible with and enhanced by the voluntary reporting of potential and actual safety problems by charter clients and air carrier participants in the Company Aviation Safety Management Program. As a result, the safety interests of governments, aviation companies and their customers are being clearly defined and coordinated.

#### *Airports and Construction Services*

The Airports and Construction Services Directorate is responsible for the provision, maintenance and operation of the national airports system, and for the planning, design, construction and maintenance of all airport facilities, with the exception of air traffic control and related equipment.

In managing the airports activity, the Directorate establishes national objectives, plans, priorities, policies and standards for marketing; provides and operates airport facilities and services; performs policing and security functions at airports; and provides advisory assistance to community airports as well as engineering and architectural support to CATA installations, both on and off airports, and to other sections of Transport Canada, other federal agencies and territorial government organizations.

#### **Québec Region**

There is one Arctic A airport (Frobisher Bay) and seven Arctic C airports (Pangnirtung, Broughton Island, Clyde River, Pond Inlet, Cape Dorset, Lake Harbour and Sanikiluaq) in the Quebec Region.

: A status report follows on projects at Quebec Region Arctic sites, including construction projects, and Air Navigation Services (ANS) restorations, replacements and improvements.

#### **Review of 1983-84**

**Frobisher Bay:**  
The emergency power unit (EPU) was replaced at the transmitter site. Some modifications were made to the staff house. Final design work on the new air terminal building and related works is well-advanced. Completion is expected in April, 1984. Consolidation of the high frequency receivers and ultra high frequency transmitter facilities was completed in February, 1984.

**Cape Dorset:**  
The relocation of the non directional beacon (NDB) was completed in January, 1984.

**Pond Inlet:**  
Non directional beacon (NDB) equipment was delivered and installed and became operational in January, 1984.

#### **Plans for 1984-85**

**Frobisher Bay:**  
Awarding of the contract for the construction of a new air terminal building and related works has been advanced to May, 1984. The contractor must purchase materials and assemble a crew for transfer to Frobisher Bay by August, 1984. Two ANS operational support vehicles are planned for replacement and the navigational aids will be consolidated.

**Clyde River:**

The replacement of a vehicle is planned for 1984/85.

**Lake Harbour:**

The purchase of an emergency vehicle is planned for 1984/85.

#### **Central Region**

One Arctic A airport (Resolute Bay) and 14 Arctic B and C sites are located in the Central Region.

Community airport radio stations (CARS) staffed by observer/communicators are established at Chesterfield Inlet, Eskimo Point, Gjoa Haven, Grise Fiord, Igloodik, Nanisivik, Pelly Bay, Repulse Bay, Spence Bay and Whale Cove.

A status report on projects at Central Region Arctic sites, including construction projects, and air navigational services (ANS) restorations, replacements and improvements follows:

#### **Review of 1983-84**

**Baker Lake:**  
The combined air terminal/operations building was completed and is operational. The furnishings were installed and final touch-ups were completed. The provision of new control cabling is approximately 60 per cent completed. One ANS operational support vehicle was replaced.

**Chesterfield Inlet:**  
Final design work for the combined air terminal/operations building was completed by the consultant. A new power cable was installed.

**Eskimo Point:**  
The runway was gravelled. Additional crushed gravel was hauled and stockpiled for a 10-year maintenance program.

**Gjoa Haven:**  
Construction of the passenger shelter building was completed and the medium-intensity lighting was installed to illuminate the runway, taxiway, apron edge, threshold and pre-threshold areas. The runway edge intensity lighting systems (REILS) and visual approach slope indicator system (VASIS), illuminated windsock and rotating beacon were also installed. Installation of meteorological equipment was completed in January, 1984.

**Hall Beach:**  
Widening of runway 12-30 was completed. The runway now meets standard minimum requirements.

**Igloodik:**  
The materials for the installation of the airport lighting were purchased and shipped to Igloodik via the Eastern Arctic sealift.

**Rankin Inlet:**  
The original fuel dispensing facility was destroyed during a DND helicopter accident in August, 1982. Construction work to replace the facility was completed in 1983/84 providing a fixed aviation fuel dispensing and storage facility.

**Repulse Bay:**  
Meteorological instruments were relocated to a new weather instrument area during October, 1983.

**Spence Bay:**  
Additional meteorological instruments were provided in August, 1983.

**Whale Cove:**  
A gravel dock was constructed to off-load the gravel crusher and a haul-road was constructed to the site. A storage garage for the equipment was completed. Feed material was stockpiled in preparation for crushing.

### **Plans for 1984-85**

**Baker Lake:**  
Installation of a transformer in the air terminal operations building will be carried out this year.

**Chesterfield Inlet:**  
A contract will be awarded in May, 1984 for the combined air terminal/operations building. Construction is to be completed in 1984/85.

**Coral Harbour:**  
Preparations are under way for the regravelling of runway 15-33.  
Replacement of the heating fuel distribution system and the heating fuel tank farm dyking projects has been deferred to future years.

**Hall Beach:**  
Work on runway 12-30 will be carried over from 1983/84.

**Igloodik:**  
A construction contract will be awarded in May, 1984 and will involve complete installation of a runway lighting package including medium intensity runway, taxiway, apron, edge threshold and pre-threshold lighting; as well as a runway edge intensity lighting system (REILS:) illuminated wind cone; rotating beacon; and field electrical centre.

**Rankin Inlet:**  
One ANS operational vehicle is anticipated for replacement during 1984/85.

**Resolute Bay:**  
An ANS operational vehicle is planned for replacement in 1984/85.

**Whale Cove:**  
The runway will be regravelled during the 1984/85 construction season.

### **Western Region**

Nine Arctic A airports (Cambridge Bay, Fort Simpson, Fort Smith, Hay River, Inuvik, Norman Wells, Yellowknife, Watson Lake and Whitehorse) and 30 Arctic B and C airports are located in the Western Region.

Community airport radio stations (CARS) staffed by observer/communicators exist at Farr, Ross River, Teslin and Old Crow in Yukon; and at Aklavik, Fort Resolution, Fort McPherson, Fort Good Hope, Holman, Wrigley and Sachs Harbour in the Northwest Territories.

A status report on projects at Western Region Arctic sites, including construction projects, and air navigation services (ANS) restorations, replacements and improvements follows.

### **Review of 1983-84**

**Beaver Creek:**  
Construction work being completed, the Beaver Creek Airport was officially opened in early November, 1983. The improvements to the airport which were finalized in 1983/84 included the completion of work on the passenger/cargo shelter and installation of the furnishings. Installation of visual aids was completed. The apron and taxiway were graveled and hazard beacons were installed.

**Cambridge Bay:**  
Further improvements to the gravel surface of runway 13-31 were carried out and the sewage tanks were replaced. Final design work was completed for the passenger/cargo shelter facilities for the handicapped.

**Fort Liard:**  
A self-propelled grader was purchased. Airport development continued including installation of visual aids and completion of the passenger/cargo shelter. Groundsite work on the runway, taxiway and apron was completed in July, 1983. Treasury Board approval was received in March for additional funds for the passenger/cargo shelter.

**Fort Norman:**  
Construction work on the passenger/cargo shelter was completed. A non directional beacon (NDB) and meteorological equipment were installed and a safety fence was erected.

**Fort Simpson:**  
Facilities for the handicapped were installed and completed.

**Fort Smith:**  
The asbestos insulation was removed from the maintenance garage and the building was reinsulated. The overhead garage doors were replaced and the building exterior was painted. Facilities for the handicapped were installed in the air terminal building and the runway lights were recabled. Work continued on the installation of a DVOR/DME (Doppler very high frequency omni directional range distance measuring equipment) and is now approximately 60 per cent completed.

**Holman Island:**  
Replacement of the building for the non-directional beacon was completed. The NDB was relocated to this new facility during March, 1984.

**Inuvik:**

Consultants were engaged and final design work on the air terminal building is expected to be completed in April, 1984. The design work on the piles was completed and the airside/groundside design work was also completed. The energy conservation retrofit is under way. Design work is under way for the firehall and sand storage building. Some repair work was also done on the air terminal building roof. The VHF/DF (very high frequency direction finding equipment) was supplied and installed in November, 1983. Upgrading of facility equipment was completed in December, 1983. An automatic terminal information system (ATIS) was supplied and installed during November, 1983.

**Tuktoyaktuk:**

Gravel was purchased and stockpiled for crushing. Gravel was placed on the runway and taxiway surfaces. A safety fence was erected, and firefighting and training equipment was supplied.

**Watson Lake:**

A security fence was erected and the design was carried out for the energy retrofit. The existing IPU (interruptable power unit) at the NDB (non directional beacon) site was completed with a new diesel IPU, in September, 1983.

**Whitehorse:**

Design work on the air terminal building is under way. Commencement of this project was successfully advanced to 1983/84. Contracts for both airside and groundside development were awarded. Work on the aircraft apron was completed with completion of the roads and carpark expected in May, 1984. Final design for the asbestos abatement control program for the maintenance garage was advanced to 1983/84 to allow for an early construction start in 1984/85. The foundation piles for the terminal building were installed. A power line for the VOR/DME (very high frequency omni range distance measuring equipment) was replaced in February, 1984.

**Wrigley:**

Gravel was placed on the surfaces of the runway, taxiway and apron. The upgrading of the lighting system, including the low intensity runway lighting (LIRL) and the runway identification lights (RIL), is under way. DVOR (doppler very high frequency omni range) equipment was installed and commissioned during February, 1984.

**Yellowknife:**

Work was completed on the overlay of runway 15-33, taxiway A and aprons 1 and 2. Facilities for the handicapped were completed and the access road to the air terminal building was paved.

***Plans for 1984-85*****Burwash:**

A program to provide vehicle advisory services is planned.

**Fort Liard:**

Consultants will be hired to design the log passenger/cargo shelter, with possible award of contract in 1984/84.

**Fort Reliance:**

A VHF (very high frequency) installation is planned for the Atmospheric Environment Service (AES).

**Fort Smith:**

Acquisition of a non directional beacon (NDB) is planned.

**Hay River:**

The existing transmitter site will be replaced. Acquisition of an NDB (non directional beacon) is planned.

**Inuvik:**

It is proposed to expand the existing air terminal building, renovate the existing terminal area, provide a paved parking lot, and expand the existing apron. Design work for the piles was completed with contract award and construction start planned for April, 1984. Completion of the final design work on the air terminal building is planned for April with contract award and construction work to follow in June. The airside/groundside contract will be awarded in April with construction planned for June. The final consultant design work for a new power house distribution load centre and interruptable power unit (IPU) will be completed. The ILS (instrument landing system) for runway 05 will be upgraded.

**Norman Wells:**

The existing FSS (flight service station) facility will be renovated.

**Watson Lake:**

Design work for a new power house distribution load centre and interruptable power unit (IPU) for the transmitter and receiver sites will be completed in 1984/85. Energy conservation work will be carried out on all buildings. An NDB (non directional beacon) will be installed.

**Whitehorse:**

A contract will be awarded for the air terminal building and related works program in May, 1984. Construction will follow in 1984/85. The final design work for the asbestos abatement project in the maintenance garage has been scheduled for June, 1984, and a contract will be awarded in July. Two NDBs (non directional beacons) will be acquired.

**Yellowknife:**

Consultants will be engaged to complete final design of the air terminal building expansion. This design work will encompass the air terminal building; apron facilities; correction of major deficiencies in the layout and capacity of the groundside systems; upgrading of water and sewage system; and the expansion of operational areas for Transport Canada within the terminal building. A warning strobe beacon will be located on the NDB (non directional beacon) as a safety measure. The ILS (instrument landing system) for runway 33 will be upgraded.

## Canadian Marine Transportation Administration

### Economic Function: Transportation

#### Responsibilities

The Canadian Marine Transportation Administration (CMTA) ensures the efficient and safe development and operation of the national marine transportation system. It coordinates the administration and management of federal marine way and terminal activities throughout the Canadian Coast Guard, the Canada Ports Corporation, the Ports and Harbours Directorate, the St. Lawrence Seaway Authority and the Atlantic, Laurentian Great Lakes and Pacific Pilotage Authorities, and nine Harbour Commissions. In the Arctic, the administration provides facilities and services for commercial and resupply shipping.

#### Canada Ports Corporation

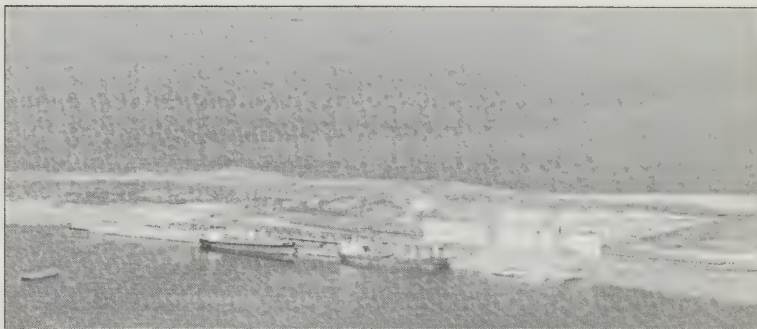
The Canada Ports Corporation (CPC) leases facilities in Churchill to the Northern Transportation Company Limited (NTCL) for its barge resupply operations to communities on the west coast of Hudson Bay. In 1983, NTCL shipped 21 000 tonnes of Arctic re-supply goods. CPC provided facilities for the loading of grain for commercial shipments overseas.

A total of 23 vessels were loaded; one wheat, 21 barley, and one pellet. The last ship departed on October 20, 1983, (the end of the shipping season).

#### Harbours and Ports Directorate

CMTA administers certain public port facilities north of 60° particularly along the Mackenzie River system and in small coastal communities from Amundsen Gulf to Ross Strait in the western Arctic. These facilities are in addition to those provided by the private sector. Facilities in the western Arctic particularly along the Mackenzie River system are generally suited to shallow draft barge traffic. There were no major changes to these facilities in 1983 and none are planned for 1984.

Two public harbours are located in the eastern Arctic, Nanisivik in Strathcona Sound on Northwestern Baffin Island, and Frobisher Bay in the southern part of Baffin Island.



Port of Churchill.

#### Canadian Coast Guard

##### General Responsibilities in the North

The Canadian Coast Guard (CCG) coordinates the delivery of cargo to northern communities for the Canadian government, the United States Air Force (USAF), and Canadian commercial interests; provides ice and routing information as well as icebreaker escort as well as support and supports environmental research and surveys. CCG installs, operates and maintains aids to marine navigation, as well as a ship reporting, clearance and information system for vessel traffic (NORDREG) and a network of Coast Guard radio station. It carries out search and rescue operations, and administers the Canada Shipping Act (CSA), the Navigable Waters Protection Act (NWPA) and the Arctic Waters Pollution Prevention Act (AWPPA).

##### Eastern Arctic Operations 1983

The Canadian Coast Guard coordinated and conducted the annual resupply in the Eastern Arctic, assisting with the delivery by ship of fuel, equipment and other commodities to isolated bases, communities and Dewline sites. It also provided ice-routing and icebreaker escort to commercial shipping, particularly on the Hudson Bay route to Churchill, and to ships calling at Frobisher Bay, Strathcona Sound, Resolute Bay, Little Cornwallis Bay and at sites on the east Baffin Coast and in Foxe Basin.

Eastern Arctic Sealift operations used the services of four commercial dry cargo carriers operating a total of nine (dry cargo vessels and one commercial bulk carrier operating four tankers. Delivery was made to 33 sites, two more than in 1982 and these included civil settlements and Dewline sites in Canada and Greenland. A total of 10 096 tonnes of dry cargo was delivered and 27 363 tonnes of bulk petroleum, oil and lubricants. Eighty six tonnes of cargo were moved between sites and an additional 508 tonnes were shipped south to Quebec, Montreal and Ogdensburg, N.Y. Personnel of the Arctic Sealift section also assumed the role of Port Warden at Nanisivik and Little Cornwallis Island and in addition, performed the role of Customs Officer at Little Cornwallis Island.

## *Vessel Traffic Services - NORDREG Canada*

The Arctic Canada Traffic System better known as NORDREG Canada and the Ice Operations office in Frobisher Bay commenced operations on July 5, 1983. This Coast Guard Traffic Centre is responsible for the monitoring and regulating of marine traffic movements in Arctic waters. This is accomplished through pre-clearance procedures and by providing information to mariners on traffic, navigational dangers, weather, ice information, ice routing and the allocation of icebreaker support as required. During the navigation season, 76 ships including Canadian Coast Guard and research vessels made approximately 100 trips through the Arctic Canada Traffic Zone. The NORDREG Centre was responsible for arranging 11 medical evacuations for both government and commercial ships. The Coast Guard Traffic Centre, Frobisher Bay for the navigation season 1983/84 processed 6 579 messages, handled 991 917 gross tonnes of shipping, sent 289 ice routes, processed 371 clearances and issued 178 notices to shipping. Total moves reported to NORDREG including in, out and lateral moves within the NORDREG Canada Zone totalled 2 108.

## *Marine Radio Communications*

During the 1983 Arctic navigation season, Coast Guard Radio Stations continued their vital role in support of the overall Coast Guard effort to ensure the safe and expeditious movement of shipping in the Canadian Arctic.

The provision of ice, weather and other navigational information by Coast Guard Radio Stations as well as the maintenance of a continuous listening watch for distress and safety communications continued throughout the season. Other efforts in the safety area included providing the necessary communications infrastructure to ensure the effectiveness of the NORDREG Ship Reporting System.

Throughout the Arctic, ships of the Coast Guard fleet were again extensive users of the radio station system for their operational and administrative traffic. Communications from commercial shipping were most significant in the Resolute, Coral Harbour, Frobisher and Churchill areas.

Concerned with the importance of good communications in support of safety related to oil and gas activity in the Arctic, CCG undertook a comprehensive study of Arctic communications. The recommendations of this study now form the basis of an extensive planning process, which continued through 1983, and will further ensure that future safety communications requirements in the Arctic are adequately met.

In 1983, eight of the 13 periodic radiobeacons in the Hudson Straits were refurbished to provide coverage of approximately 80 nautical miles each. A ninth, marking the entrance to Hudson Strait, was converted to continuous operation with coverage of 180 nautical miles. Three radio beacons on the Labrador coast were decommissioned.

A contract was placed with a consulting firm during 1983 to analyze Omega accuracy and availability in the Beaufort Sea region of the Western Arctic, utilizing shore and shipboard monitor data collected in previous years. A report will be issued in 1984.

## *Ship Safety Activities*

Inspection activity for the Eastern Arctic and Western is handled by Coast Guard regions, in collaboration with Coast Guard headquarters surveyors, who are normally the first to be contacted when vessels sustain ice damage. During the 1983/84 season, ice damage reports were received relating to vessels. Technical advice was provided from Ottawa headquarters with regard to temporary repairs and safety precautions to be taken.

The headquarters sections of Coast Guard Ship Safety also provided advisory services to NORDREG throughout the season, on requests for Zone entry clearance for ships. Additionally, guidance and training was provided by Ship Safety Branch nautical surveyors, to Port Wardens assigned to the ports of Nanisivik and Polaris.

Various structural, stability and machinery verification checks were carried out by Headquarters marine surveyors during the year, on approximately 36 separate vessels, for purposes of regulation compliance. Technical advice was also given, as requested by the Arctic Control Authority, to assess various proposals for Arctic transportation and development schemes, submitted by industry proponents.

Ship Safety (Northern) officers participated with COGLA in the assessment of drilling season extensions in the Beaufort. Ship Safety (Northern) also carried out extensive field trials of Arctic vessels in the Western and Eastern Arctic.

## *Marine Aids to Navigation*

In the Hudson Strait, lighted aids on Coats Island, Charles Island, Mansel Island and Nottingham were converted from battery power to solar power. In addition, Radar Beacon (RACON) service was established at each of those sites.

CCG is studying the effectiveness of RACON service as a replacement for the radio beacon service currently provided in this area.

In September, 1983, site surveys were carried out on Griffith Island (near Resolute Bay) for the installation and testing of new power generating systems for marine aids to navigation and telecommunications. These power systems will be designed to operate unattended, 12 months per year. Tentative plans call for the first test system to be in place during the summer of 1985.

## *Western Arctic Operations*

The Coast Guard Bay River District and the Beaufort Sea region are the two major areas of Coast Guard operations in the Western Arctic. Both areas are currently the responsibility of the Coast Guard Western Region. Five shallow draft CCG ships operate out of the Bay River District. These ships maintain 3 000 aids to navigation along the 3 600 kilometres of scheduled shipping routes on the Mackenzie and Athabasca Rivers, their tributaries and, with assistance from other vessels, another 2 500 kilometres of shipping routes along the Western Arctic coastline.

A helicopter, able to operate from three of the shallow draft ships as well as from the CCG Icebreaker Camsell, is assigned to maintenance navigation aids in the Mackenzie River system.

### *Arctic Ice Conditions - Summer 1983*

Overall ice conditions in the Arctic during the summer navigation of 1983 were more severe than those of 1982. In the Approaches to Hudson Bay, patches and strips of old ice persisted along the Labrador coast at the entrance to Hudson Strait well into August, about three weeks later than in a normal ice year. In Baffin Bay and Parry Channel, breakup was delayed and clearing was less extensive than in 1982. In the Western Arctic, a favourable "ice-year" was experienced in the Southern Beaufort Sea with a near normal breakup followed by the development of a broad area of open water and a near normal freeze-up. Breakup in the Beaufort Sea was close to normal in 1983 but the extent of clearing was significantly less than in 1982. Freeze-up in that part of the Arctic also began in the second half of September, about three weeks earlier than normal.

Nine Canadian Coast Guard icebreakers were deployed to the 1983 northern operations, to support commercial shipping and carry out specialized projects on behalf of government departments, mainly hydrographic, oceanographic and scientific surveys for the Department of Fisheries and Oceans, the Department of the Environment and the Department of National Defence.

### **Coast Guard Northern Region Development**

The Administrator, CMTA, authorized the establishment of a Northern Directorate in Coast Guard effective August 4, 1981. The initial resources utilized were those of the Polar Icebreaker Project Group and those designated for Arctic activities in the Coast Guard Ship Safety Branch.

The purpose of this Directorate is to ensure that a single agency has the responsibility for planning and directing the operation of facilities and services required in the North as mandated to the Coast Guard through various Acts, Regulations and Cabinet Directives. The North in this context is defined as all Canadian waters north of the 60th parallel, and including Hudson, James and Ungava Bays as well.

### **Polar Icebreaker Program**

Cabinet approved in August 1981, the preparation of plans and specifications for a conventionally powered icebreaker to meet the Arctic Shipping Pollution Prevention Regulations for a Class 8 ship. This phase has now been completed.

Prior to proceeding with the construction phase, Transport Canada will submit to Cabinet, a report prepared jointly with Energy, Mines and Resources, to justify the construction of the ship in relation to Arctic resources development. The departments are not, at this time, in a position to provide authoritative estimates on the timing of proposed Arctic developments and hence to recommend construction of the ship. The lead time for construction is estimated to be six years.

Therefore, Transport Canada prepared and submitted to Treasury Board a submission which requested approval to proceed with funded proposals for construction. The intent is to reduce the pre-construction phase without committing the government to a construction contract. Treasury Board approved, in October, 1983, the expenditure of two million dollars (\$2 M) to obtain funded proposals from Canadian shipyards capable of building this icebreaker.

A request for proposals was issued on November 29, 1983 to five shipyards. Three shipyards submitted qualification proposals, now being reviewed and evaluated. It is anticipated that contracts for the contract definition activities will be awarded by the end of June, 1984.

Transport Canada, by requesting funded proposals, will obtain a construction estimate valid for an 18 month period, thus ensuring that the government will be in a position to respond quickly, should developments in the Arctic justify construction of a Class 8 icebreaker.

### **Arctic Ship Safety - Coast Guard Northern**

This section has been primarily responsible for research and development (R&D) projects directed towards the updating of the Arctic Shipping Pollution Prevention Regulations. An Interim Standard for Structural Steel Requirements for Arctic Class vessels has been produced and is now in the regulatory process. Other R&D projects involved participation of industry, other components of Transport Canada and other government departments and agencies.

In addition, the Arctic Ship Safety section participates annually with the Department of Indian and Northern Affairs and the Canada Oil and Gas Lands Administration in reviewing petroleum exploration and development operations in the Beaufort Sea. This review provides information to Coast Guard management enabling assessment of requests for season extensions in the Beaufort Sea.

Industry proposals concerning resource development in the Arctic are reviewed to assess proposed marine transport systems in accordance with the relevant Acts and Regulations. Several proposals have been reviewed or are under review.

### *Research and Development*

Coast Guard Northern is responsible for research and development in support of Arctic marine transportation. The majority of the R&D projects are directed towards the updating of the Arctic Shipping Pollution Prevention Regulations concerning the design, construction and operation of ships and other marine vehicles intended for service in the Arctic.

### *Pollution Prevention Activities*

In August, 1983, Coast Guard Emergencies personnel from Western Region carried out a joint pollution countermeasures exercise with Canmar Exploration. The exercise involved the deployment, testing and recovery of special pollution countermeasures equipment. This exercise had to be limited to Tuktoyaktuk harbour as severe ice conditions prevented the movement of small craft into the Beaufort Sea itself.

### *Regulatory Development*

Coast Guard Northern is engaged in a number of departmental and external reviews of northern regulatory regimes with the varied aims of strengthening clarifying and updating the regulatory base. Sovereignty, the Law of the Sea, perceived overlaps in regulations, and the proposed extension to offshore developments of Canadian laws are the themes of separate reviews.

## Water Transportation Assistance Directorate

The Water Transportation Assistance Directorate subsidizes essential water transport services where full cost recovery rates are impractical.

### Review 1983-84

The Directorate's main Arctic activity is the subsidization of Northern Transportation Company Limited (NTCL) barge services from Churchill to the Keewatin ports. In 1983-84, this subsidy amounted to \$643,435. The Canadian Marine Transportation Administration will assume responsibility for this subsidy program in 1984-85.

## Transportation Research and Development

### Economic Function: Research

#### Responsibilities

The Research and Development Directorate of the Strategic Planning Group of Transport Canada plans and coordinates transportation research and development (R&D) in the federal government. The Directorate's Transportation Development Centre (TDC) in Montreal undertakes R&D projects in support of TC's three operational administrations as well as long-range, national projects. The Directorate also conducts transportation R&D projects supported by the National Energy Program (NEP).

### Review 1983/84

This was the second full year of the three-year (81/82 to 83/84), \$14 million, accelerated Arctic Marine R&D program approved by Cabinet in June, 1981. The program, coordinated and managed by the Canadian Marine Transportation Administration of Transport Canada and implemented jointly by TC, DFO and DOE, is aimed at ensuring safe and reliable, year-round marine operations in the Canadian North. TDC's base budget funds are augmented by this program and by the NEP program for R&D activities in the North. In addition, funding for some projects is further augmented by shared cost arrangements with industry.

R&D activities of direct benefit to marine transportation in the North include: Arctic Vessel Research, Icebreaking and Ice-Related Research, Ice Navigation Systems, Ports and Harbours.

#### 1. Arctic Vessel Research

The icebreaking cargo vessel M.V. Arctic underwent a continuing evaluation. A detailed analysis was made of the various data packages collected during previous years. Projects to optimize the bow shape of the M.V. Arctic and to define a next generation ship-instrumentation system for further data gathering were begun.

Other projects relate to regulations governing the design of components for ships operating in ice. These include continuing research into protection of propellers in ice, the interaction of propellers and ice, and the measurement of ice impact loads on the blades of nozzle-protected propellers. A study predicting heat flow through a ship's hull was completed. Weld corrosion and the suitability of various protective coatings to counteract such corrosion were investigated, and development of an analytical model to calculate the dynamic response of ship's structure to various bow impact loads was begun.

A 1/5th scale model of an innovative hydrostatic stern tube bearing for use on large tankers to extend the life of stern gear was tested. A long term research effort in the field of ship manoeuvring simulation in ice was defined, in to develop research capability on ship manoeuvring in Arctic ice.

#### 2. Icebreaking and Ice-Related Research

Projects in this category with potential benefit for Arctic use include testing on the icebreaking resistance of Small Waterplane Area Twin Hull (SWATH) ships, (polar LNG tankers of up to 140,000 m<sup>3</sup> capacity) a study of the basic theories concerning icebreaking resistance mechanisms. Work related to the possibility of transferring air cushion icebreaking technology to Arctic applications continues.

#### 3. Ice Navigation Systems

Technologies designed to avoid ice impact and to reduce its effect when it does occur, continue to have a high priority for TDC funding.

An all-weather, airborne, sea-ice thickness sensor was successfully field tested.

A major program to define a remote, sensing, communications, data processing and navigation system (REMSCAN) for providing ice information to marine transportation operators and ship masters in the Arctic was begun.

A preliminary specification for the development of an ice hazard and detection/collision avoidance system was developed. Discussions with industry continue to determine specific system requirements.

Work continues on the quasi-doppler marine VHF direction finder.

#### 4. Ports and Harbours

Efficient port operations and installations are paramount to the productivity of shipping in the North. TDC tested the suitability of ice-cutting techniques to resolve the problem of ice interference with berthing operations. An investigation of the compaction process of frozen soil was made to provide base data for possible equipment development for Northern excavation.

#### Other projects

Not all R&D relating to the North is marine-oriented. Two significant TDC projects related primarily to air operations in the North. A prototype unattended navigation facility to improve air-to-ground communication and navigation was tested and evaluated. Work is now under way on several design refinements to the facility.

Several concepts were developed for an offshore air terminal to serve drilling rigs in Canadian oil resource development areas.

TDC is also supporting a major design study for an Arctic snowmobile to enable design of a vehicle offering greater economy and reliability in the North.

## Coast Guard Northern

Coast Guard Northern is responsible for research and development in support of Arctic marine transportation. The majority of the R&D projects are directed towards the updating of the Arctic Shipping Pollution Prevention Regulations concerning the design, construction and operation of ships and other marine vehicles intended for Arctic service.

This past year, approximately \$1.6 million and \$770 thousand was managed on behalf of the Arctic Marine Research and Development Program and the Energy Research and Development Program, respectively.

## Canadian Marine Transport Administration

Within CMTA, R&D is undertaken systematically in the area of transportation and related technologies.

Marine R&D is directed towards increasing the safety or technology efficiency of marine transportation and identifying technically feasible alternatives to support specific program objectives. It is used primarily to implement regulations, improve statutory services or introduce new services. Where the department augments the efforts of other departments, the provinces or the private sector, R&D is undertaken to accelerate progress in areas of pressing national concern, particularly industrial growth, regional development, training and overall productivity.

The marine R&D program involves activities with other governments, industry and universities, as well as within the federal government and focusses on those areas of marine technology which are critical to the delivery and maintenance of CMTA's specific mandate.

In addition, CMTA plans and promotes continuing R&D activities in respect of general marine technology and support to the commercial marine sector and allied industries. CMTA also incorporates emerging concerns for energy security, sovereignty and safety as a major departmental focus for marine research and development activities. During the period 1981 to 1983, more than 100 projects were initiated under the \$14 million three-year Arctic Marine R&D Program. These included ongoing R&D into ship structure and ice interaction using the MV ARCTIC, Canada's only ice-strengthened bulk carrier, as well as other commercial and federal vessels. The Arctic Marine R&D Program has been extended for a second phase through 1984/85 and 1985/86 at \$4 million per annum. Plans are under way to propose a subsequent five-year program at \$8 million per annum.

In 1983/84, a major activity has been the development of a comprehensive Marine Transportation R&D Plan to ensure the development of an adequate transportation system in areas south of 60° N. Latitude.

In 1983/84, cooperation with the United States to promote marine transportation R&D was maintained at a high level. This cooperation was in the form of exchanges of information and joint research projects on navigation in ice, vessel vibration and stress. In addition, Canada entered into a feasibility study with Japan on possible cooperation in Arctic Marine R&D, and negotiated a Memorandum of Understanding with the Finnish government to provide for cooperation in the field of Arctic marine transportation R&D.

CMTA also has initiated a wide range of projects in cooperation with the marine shipping and shipbuilding industries. While many projects apply primarily in areas south of 60°, a number have universal application. The Marine Advisory Board is CMTA's primary link with the industry and provides direct feedback on the industry's priority concerns in the Arctic and elsewhere. Under its auspices, CMTA has undertaken significant new R&D into ice hazard detection, remote ice sensor systems, ship ballasting in ice conditions, hull corrosion, friction-reducing systems, tug/barge combinations, and harbour ice control/management.

## Government Relations Branch

### Economic Function: General Government Services

The Government Relations Branch provides advice, coordination and liaison on multi-modal transportation policy matters between Transport Canada and the provincial and territorial governments.

The senior adviser for the North was involved in the attempted resolution of a number of issues affecting the North such as the temporary closure of the Whitepass and Yukon railway, airport matters at Tuktoyaktuk and summer re-supply in the Keewatin and Lake Athabasca regions.

The proceedings of the Northern Transportation Conference, held in Whitehorse, Y.T.; October, 1982, were released in the spring of 1983. In addition, a follow-up report on the issues identified at the conference was prepared and released to all attendees.

The branch is responsible for co-ordinating the department's native land claim negotiations and as such was active in the Council for Yukon Indians (CYI), Committee of Original Peoples' Entitlement (COPE) and Tunavik Federal of Nanavut/Inuit Tapirisat of Canada (FTN/ITC) claims.

Work continued on the development of a new long term northern housing policy which was developed in a committee represented by all departments having a significant northern staff. The policy proposals are now with Treasury Board.

# Veterans Affairs Canada

## Economic Function: Welfare

### **Responsibilities**

Veterans Services of the Department of Veterans Affairs provides health and social services, financial assistance and counselling to eligible veterans and their dependants. The Department also provides services to certain civilians whose work was closely related to that of the Armed Forces during wartime. The program has no district offices in the Yukon or Northwest Territories because of the small number of clients. Instead, counsellors visit the Yukon from the Prince George District Office. The Northwest Territories are served from the Edmonton District Office.

The *Veterans Land Administration* provides assistance, guidance and counselling to veterans established in the Territories under the Veterans' Land Act. These services make it possible for veterans, their heirs, devisees or personal representatives to acquire title to the property on which they presently reside under an Agreement of Sale with the Director, the Veterans' Land Act.

The program has no district offices in the Yukon or Northwest Territories because of the very small number of clients. These areas are serviced from the Edmonton District Office.

The *Canadian Pension Commission* ensures that benefits available under the veterans' pension legislation are extended to all eligible veterans and their dependants. Services include counselling, help in applying for benefits available under the pension legislation, and medical examinations for assessing eligibility for benefits. The Vancouver and Edmonton District Offices provide the Yukon and the Northwest Territories with the same services as those available elsewhere in Canada.

The *Bureau of Pensions Advocates* provides a counselling service to pension applicants and pensioners with respect to their rights under the Pension Act and related statutes, assists them in the preparation of pension claims and represents them at hearings under the Pension Act.

This service is available to veterans of either wartime or peacetime service in the Canadian forces and their dependants, and to former members of the RCMP and their dependants.

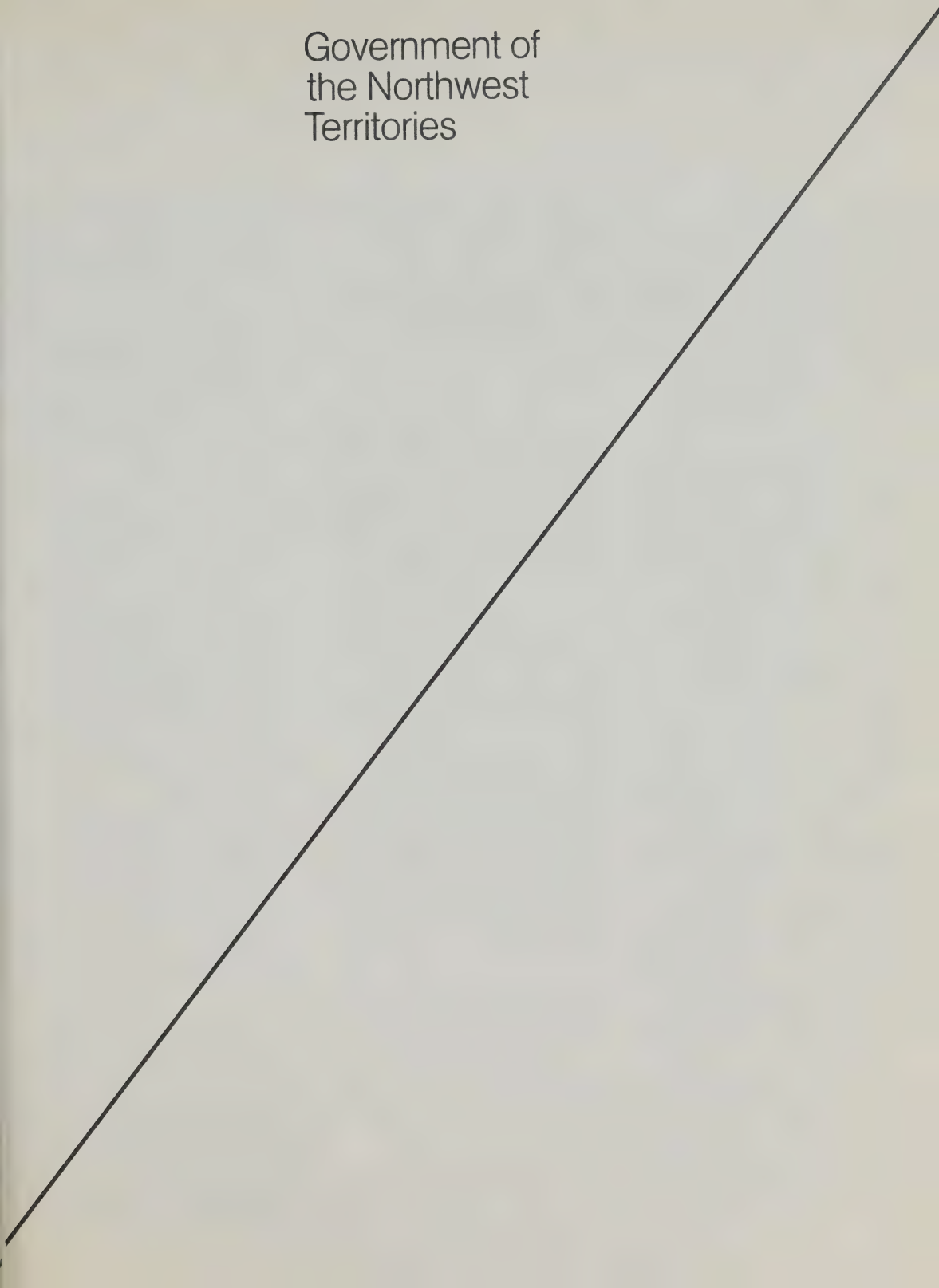
Veterans located in the Yukon and the district of MacKenzie are served by the Bureau of Pensions Advocates District Office in Edmonton. Those in other parts of the Northwest Territories are served through the District Office in Winnipeg. However, anyone living in the Yukon or Northwest Territories can get help from any convenient district office.

If the Canadian Pension Commission denies a pension application, the applicant may request to be heard by an Entitlement Board. The Canadian Pension Commission will pay travel expenses for the applicant and witnesses to the place of hearing.

### **Review 1983-1984**

At March 31, 1984, 38 veterans or their families in the Northwest Territories were receiving pensions for disability or death. In the Yukon, 65 individuals had been awarded similar pensions. In the Northwest Territories, there were 14 recipients of either War Veterans Allowances or Civilian War Allowances, and 95 in the Yukon.

Government of  
the Northwest  
Territories



## Commissioner's Activities

In 1983 one of Commissioner John Parker's major thrusts was the continuing devolution of responsibilities from the Commissioner's office to elected ministers. After consultation with the Honourable John C. Munro, the Departments of Information and Public Works, administered by the Commissioner and Deputy Commissioner respectively, became the responsibility of elected members of the Executive Council, thus placing all but one department under ministerial control.

Further significant changes to the Executive structure occurred in June. The chairmanship of the Financial Management Board was assumed by the Honourable T.H. Butters, Minister of Finance, with Mr. Parker taking over the deputy chairman's position. The Leader of the Elected Executive moved into the role of deputy chairman of the Executive Council, while the Commissioner continued as chairman. These changes strengthened the roles and responsibilities of the elected members in the move towards responsible government.

The Commissioner's Awards Committee considers nominations and makes recommendation to the Commissioner regarding these awards, which are presented to people who have distinguished themselves by exceptional public service or by acts of bravery.

In January, Mr. Justice Joseph Potts of Ontario was appointed to head a three-member electoral boundaries commission to study the size and number of constituencies in the N.W.T. Chief Jim Antoine of Fort Simpson and David Alagalak of Eskimo Point served as commission members. Extensive community consultations were carried out and the commission's report to the Legislature recommended that the number of constituencies be increased to 24 and that certain adjustments be made to constituency boundaries. The recommendations, in large measure, were accepted and enacted.

Throughout the year, Commissioner Parker spoke to a number of groups and organizations in the Northwest Territories and southern Canada. His two major themes were his support of political and constitutional development in the north, and adverse effect to uninformed conservationist groups on the traditional and renewable resource economy.

On February 2 in Yellowknife, the Commissioner opened the tenth session of the Ninth Legislative Assembly. While various economic sectors were experiencing major downturns, he noted in his address that there were reasons for cautious optimism about the days ahead.

The eleventh and final session of the Ninth Assembly was opened by the Commissioner in Yellowknife on August 30. In his opening address Mr. Parker recognized the contribution which has been made by the Honourable John Munro and other federal ministers throughout the life of the Ninth Assembly towards meeting northern constitutional and political aspirations. Assent was given to bills on September 10, the day the Assembly prorogued. The Commissioner dissolved the Ninth Assembly on September 16 and with the signing of the writs of election for 24 constituencies on September 19 preparations were under way for the election on November 21.

The position of Deputy Commissioner became redundant at the end of 1983 and an eighth ministerial position was added to the Executive Council. Mr. Robert Pilot, formerly the Deputy Commissioner, was appointed deputy minister of the Executive Council, effective December 12. The new position strengthens the administrative and operational side of the Executive Council office.

An important step in environmental protection was taken during 1983 with a complete re-organization of the Arctic Seas oil spill contingency plan. Chairing an intergovernmental committee, with strong support from all government agencies involved, the Deputy Commissioner guided the realignment of government responsibilities in establishing a much improved contingency plan for off-shore non-ship oil spills.

## Justice and Public Services

### Economic Function: General Government Services

#### *Minister's Introduction*

During the past year, the Minister of Justice and Public Services, the Honourable George Braden, continued to place emphasis on the priorities of the government and the needs of the people of the Northwest Territories to be addressed by the Department of Justice and Public Services.

The justice of the peace training program became fully operational in 1983, with the appointment of a justice of the peace training officer and an assistant training officer. Workshops and training seminars were held in all regions of the Territories.

Mr. Braden and his staff contributed substantially to the success of the aboriginal and constitutional rights meetings which took place during the winter of 1982-83, culminating in the First Ministers' Conference in March 1983.

Mr. Braden attended the federal-provincial-territorial conference on status of women matters in May 1983 and was responsible for many of the initiatives leading up to the establishment of the status of women program in the Government of the N.W.T.

In keeping with the government's policy to give more responsibility to the regions, Mr. Braden directed the placement of a regional superintendent of justice and public services in the Baffin region.

Two major pieces of legislation, the Liquor Ordinance and the Mine Safety Ordinance, were enacted.

A human rights code for the Northwest Territories is being developed for presentation to the Legislative Assembly.

#### *Directorate*

The directorate provides overall guidance and direction for all services and programs offered by the department and ensures that statutory obligations are met. The directorate provided the necessary support to the ministers representing the Territorial Government at the First Ministers' Conference on Aboriginal Rights and the Constitution.

Development of a human rights code for the Northwest Territories was begun.

## Legal Division

The legal division provides legal advice and services to all government departments, secretariats, boards, and the N.W.T. Housing Corporation.

The legal division is also responsible for administering the criminal injuries compensation program pursuant to the Criminal Compensation Ordinance.

The public trustee office provides for the administration of estates and trusts of infants, mental incompetents and certain intestates. The public trustee administers all Indian estates in the Northwest Territories, and has approximately 340 estates under administration.

## Legislation Division

The legislation division is responsible for the preparation of all Territorial legislation and also provides legal opinions in the development of legislation.

All legislation, orders, appointments and notices are published in the Northwest Territories Gazette. Annual volumes of the ordinances and legislative summaries of the legislation passed at each session of the Legislative Assembly are published.

The division is also responsible for law reform in the Northwest Territories.

## Court Services

The court services division is responsible for providing administrative support to the Supreme Court and the Territorial Court of the Northwest Territories. The inspector of legal offices administers the justice of the peace and coroners programs, as well as the federal firearms program.

The inspector of legal offices is responsible for recruitment and training of approximately 120 justices of the peace and 96 coroners in N.W.T. communities. The justices of the peace perform a valuable service, hearing approximately 40 per cent of all criminal cases.

Justice of the peace training seminars were held in the Inuvik, Keewatin and Kitikmeot regions in 1983.

## Land Titles-Legal Registries

The land titles section is responsible for the administration of a Torrens system of land registration. Ownership of and interests in privately owned land are established by the filing or registration of documents in the land titles office. Approximately 3,000 documents were registered during 1983 compared to 2,000 documents in 1982.

## Vital Statistics

	Births	Marriages	Deaths	Adoptions	Change of Name
1983	1246	250	240	165	57
1982	1078	230	185	102	35
% Increase	13%	8%	23%	38%	39%

The legal registries section is responsible for incorporating both profit and non-profit corporations, as well as maintaining a registry of companies incorporated outside the Northwest Territories but operating within the Territories. The number of corporations incorporated or registered during 1983 was expected to exceed 400 compared to 305 during 1982.

## Legal Services Board

Established under the Legal Services Ordinance, the legal services board ensures the provision of legal services to persons in need of legal aid throughout the Northwest Territories. Legal assistance is provided to recipients by members of the private Bar.

The Native Courtworkers' Association and Maliiganik Tukisiiniakvik (the legal aid clinic in the Baffin region) have been established as regional committees under the Legal Services Ordinance.

During 1983, the courtworker program was expanded with the placement of a courtworker in the Keewatin region. A lawyer located in Inuvik is a member of the legal aid panel and provides legal aid services in the Inuvik region.

## Safety Division

The safety division sets safety standards in the Northwest Territories for fire, mechanical, electrical and occupational health and safety. In 1983 the Gas Protection Ordinance and emergency measures, including the transportation of dangerous goods, were assigned to the Division.

## Fire Safety

The number of fires and fatalities in 1983 decreased from the previous year.

In November 1982, new regulations were approved by the Executive Council under which all buildings in the multi-unit residential classification must have ionized, hard-wired in, U.L.C. approved smoke alarms. The use of smoke detectors is expected to further decrease the number of fire-related fatalities.

Seven new fire trucks were purchased. Two were placed in the Baffin region, four in the Inuvik region, and one in the Fort Smith region. Local fire fighters were trained in the use of this equipment.

## Mechanical/Electrical

The mechanical/electrical section administers the Electrical Protection and Boilers and Pressure Vessels Ordinance. The major aspect of this work involves on-site inspections of electrical installations and boilers and pressure vessels. A revised Canadian Electrical Code was brought into effect during the year.

The number of inspections and registrations of boilers and pressure vessels increased, due in part to developments in the Inuvik and Norman Wells areas.

Work to develop a certification procedure combining the building operator program with an apprentice trade similar to the housing maintenance servicemen was begun.

This section also provides a gas inspection service.

### *Occupational Health and Safety*

A review of the special occupational health and safety problems facing northerners was essentially completed.

Other major projects included the development of an occupational health and safety information and resource library and the development of pamphlets, called N.W.T. Safe Living Books, in both English and Inuktitut.

A safety officer from this section was assigned to the Norman Wells project.

Workers "right to refuse" legislation was enacted by amendment to the N.W.T. Safety Ordinance. This legislation protects N.W.T. workers from disciplinary action if they refuse to work in conditions posing imminent danger to their health and safety.

### *Emergency Measures*

Civil emergency measures planning was transferred from the Executive to the safety division in 1983. The co-ordinator is responsible for both the Transportation of Dangerous Goods and Civil Emergency Measures ordinances, with the mandate to provide an effective, coherent, and rapid response to any real or apprehended emergency involving a community or highway system in the Northwest Territories. Included in the mandate is responsibility to assist all regions in the formulation and exercising of regional and community emergency planning and to act as liaison between the Government of the N.W.T. and Emergency Planning Canada, through the Regional Director EPC in Edmonton.

### *Labour Services*

The labour services section administers Northwest Territories labour and human rights law. The principal statutes are the Labour Standards Ordinance and the Fair Practices Ordinance.

The Labour Standards Ordinance guarantees minimum employment standards. The labour standards officer enforces and applies that statute, as well as investigating complaints made under it. The labour standards board has been established, made up of members of the public, to hear appeals from decisions of the labour standards officer.

Human rights complaints are investigated through the medium of the Fair Practices Ordinance which sets out prohibited grounds of discrimination. In addition to those concerning employment related matters, complaints dealing with provision of services, accommodation, membership in trade unions and with respect to discriminatory publications are considered.

The mining inspection division compiles and maintains statistics on accidents and on production. Accident frequency and severity decreased over previous years.

### **Consumer Services**

#### **Economic Function: General Government Services**

##### *Consumer Affairs*

The consumer affairs office investigates consumer complaints, mediates disputes between landlord and tenant, administers the licensing of vendors, direct sellers and collection agents, as well as the issuing of lottery licences to religious and charitable organizations. This office also serves as the metric information centre for the Northwest Territories.

Information brochures were developed in both English and Inuktitut and distributed throughout the Territories. AnikInfo spots, aired on the C.B.C. Northern Television Service, were produced.

##### *Insurance, Professional and Business Licensing*

This section is responsible for the registration and licensing of doctors, dentists, optometrists, ophthalmic medical assistants, pharmacists, psychologists and veterinarians. A decrease in the number of licenses issued - from 382 in 1982 to 180 in 1983 - was due in part to the increased length of stay of professionals in the Territories.

Eight hundred unincorporated businesses were licensed in 1983. A total of 3850 certificates of all types were issued in 1983.

### **Prince of Wales Northern Heritage Centre**

#### **Economic Function: Culture and Recreation**

From January 1983 through August 1983, a total of 26,792 visitors passed through the Prince of Wales Northern Heritage Centre, breaking all previous records for attendance.

The second volume of "Sources for Northwest Territories History" was published. Archival staff continued to acquire photographs and documents relevant to the history of the Northwest Territories, and assisted Fort Good Hope in establishing a community museum/archives.

Major projects completed during the year included a polar bear exhibit on display in the front lobby and the mounting of an exhibit of Dene women's art. The Northern Heritage Centre presented 12 temporary and travelling exhibits developed from its collections, on loan from other institutions or produced in cooperation with community groups. Three travelling exhibits dealing with Polar Bears, Archaeology of the N.W.T., and the North Before People produced by the centre travelled to various communities throughout the Northwest Territories.

Educational activities and special events taking place in 1983 included: a children's film festival held to celebrate Heritage Day; Caribou Carnival festivities including communications exhibits and demonstrations; a Tim Sikyea fashion show; and a variety of vehicles displayed in the parking lot for Vehicles Day.

Over 2000 artifacts, specimens and works of art became part of the permanent collections in 1983. This included the repatriation of five collections of early ethnographic material from southern Canada and the United States.

The museums advisory services assisted community museums, historical societies and heritage groups in the N.W.T.

The archaeology program expanded its capabilities with the secondment of a historical archaeologist from Parks Canada for a two year period. The historical archaeologist will compile an inventory and conduct field assessments of post-contact archaeological sites in the Northwest Territories.

The centre continued to assist the Northern Heritage Society's archaeological field school on Somerset Island, which involved students from across the Northwest Territories. A similar training program was incorporated into one of the centre's rescue archaeology operations in the Mackenzie Delta.

An inventory and assessment of historic and prehistoric sites along the Mackenzie River resumed in the vicinity of Fort Norman.

### **Library Services**

The agreement with the Province of Alberta which permits N.W.T. participation in their inter-library loan circuit and Zenith reference service was established on a permanent basis.

Audiences totalling approximately 2000 attended various library programs throughout the North. The annual book festival and the children's book festival were celebrated.

Circulation figures showed an upward trend and materials available in all services increased.

### **Priorities and Planning Secretariat**

The Priorities and Planning Committee was established in 1980 as the forum for consideration of new policies and programs, government priorities and organizational change. A committee of the Executive Council, it is chaired by the Leader of the Elected Executive, the Hon. George Braden.

The Priorities and Planning Secretariat, formally recognized in December 1981, reports to this committee, provides support services and advises members on proposals for committee consideration. The secretariat is also responsible for supporting the Executive priorities and long-term government organizational plans.

### **Status of Women**

The Honourable Dennis Patterson assumed full responsibility on May 20, 1983 for the status of women portfolio.

It was agreed that an advisory council on the status of women with an interim co-ordinator would be formed. The purpose of the council is to provide direction to the government on all matters of concern to women.

## **Government Services**

### **Economic Function: General Government Services**

#### *Introduction*

The Department of Government Services, provides support to other departments in areas such as purchase and management of supplies and materials, communications, transportation and computer-related services. In addition, the department also administers the liquor system, the motor vehicles registry and the distribution of petroleum products to communities not served by the private sector.

In 1983, Mr. Butters attended the Northern Aviation Transportation Association Conference in Yellowknife the Minister, Mr. Butters minister announced that the government would implement a new charter aircraft directive that would distribute charters to carriers on an equitable basis based on number and types of aircraft. He also announced that the department would continue to monitor the industry for adherence to the safety and maintenance standards established by M.O.T. He stressed the need to support local carriers.

Planning progressed in 1983 to improve enforcement of motor vehicles regulations at the weigh scale operation. This initiative will address the concern expressed by the local trucking industry that they were not being afforded the degree of economic protection stated in N.W.T. legislation. Plans call for the implementation of a compulsory registration system and the construction of weigh scale facilities in Inuvik in 1984 and Fort Liard in 1985. A revised Motor Vehicle Ordinance will be introduced to the Legislative Assembly in 1984.

In 1983 the Legislative Assembly passed a new Liquor Ordinance, which resulted in the transfer of responsibility for the Liquor Licensing board to the Minister of Justice and Public Services. Mr. Butters continued to be responsible for the distribution of liquor products within the Northwest Territories and for the operation of government liquor stores and agents.

During 1983, major improvements were made to the department's petroleum products accounting system in response to audit observations made by the Auditor General of Canada. Also completed was the measurement of the government's tank farm inventory. Options were developed on bulk fuel agencies which could result in the private sector assuming responsibility for the distribution of petroleum products.

#### *Systems and Computer Services*

The systems and computer services division is responsible for delivery of computing resources, services and expertise required by governmental departments and organizations. During 1983, construction of new facilities, which will house the division's staff and computer equipment, was completed.

Information systems development slowed in 1983, due to the climate of financial restraint. Staff undertook a project to improve the information system serving the petroleum products division. The enhanced system is expected to be in operation early in 1984.

A systems support section established in 1982 provides day to day systems maintenance functions for all operational computer systems used by the government.

During 1983, the government's computing facilities were upgraded with the installation of a Hewlett-Packard 3000 Series 64 computer. Transfer of the data entry function to the department was completed.

#### *Supply Services*

Through the purchasing and distribution sections, the supply services division is responsible for the purchase and management of supplies and materials for the government. In the regions the three main functions (purchasing, warehousing and transportation) have been managed as separate units. In 1983, there was movement to reconsolidate these functions into a supply services materials management organization.

Continued application of the northern preference policy resulted in an increase in government purchasing in the Territories. A review of the policy was undertaken. In addition, a northern contractors registry was established for all types of government contracting and a directory of northern contractors will be published.

A new aircraft charter directive was developed and implemented.

An improved aviation safety program was developed by up-grading and formalizing standards of safety and maintenance by which charter carriers doing business with the government will be assessed.

Agreements were developed to provide transportation assistance funding to Pelly Bay and Snare Lake, in addition to that provided to Fort Franklin. Operational responsibility for management of these programs was decentralized to the regions.

#### *Office Services*

The office services division is responsible for provision of office support services to all government departments. This includes records management telecommunications, postal services and the office equipment and furnishings program.

During 1983, a new office equipment and furnishings manual and catalogue were partially completed. The development of an accountable assets inventory was begun.

A records management program to meet government needs is being planned. The construction of a new record centre was approved.

#### *Motor Vehicles*

The motor vehicles division is responsible for enforcing the Vehicles Ordinance, the Public Service Vehicles Ordinance and attendant regulations, which provide for the licensing and registering of drivers and vehicles in the Northwest Territories.

Vehicle registrations totalled approximately 22,500 in 1982, while approximately 21,500 were recorded as of September/83. As of September, 17,000 drivers' licences had been issued in 1983.

A driver examination program was conducted for the first time in Frobisher Bay in 1983.

#### *Petroleum Products*

The petroleum products division supplies a variety of petroleum products in 45 communities in the Northwest Territories, where such service is not available from the private sector.

The aircraft refueling facility in Rankin Inlet, destroyed when a helicopter crashed in August 1982, was replaced. An aircraft refueling facility in Coppermine was completed, and a new one is being built in Pond Inlet.

Major tank farm projects are planned for, Lac La Martre, Nahanni Butte, Rae Lakes, Trout Lake, Arctic Red River, Tuktoyaktuk, Broughton Island, Hall Beach, Pond Inlet, Eskimo Point, Repulse Bay and Spence Bay.

#### *Liquor Control System*

The system manages the purchase, distribution and sale of alcoholic beverages to the residents and licensees of the Northwest Territories, through three government stores, six agencies and two warehouses.

In 1983 gross sales increased by 13.8%. Actual net income was \$8.2 million.

### **Finance**

## **Economic Function: General Government Services**

#### *Minister's Introduction*

During 1983, the Minister of Finance, Tom Butters, sought to increase the fiscal responsibility and accountability of the Government of the Northwest Territories through the adoption of financial practices common in provincial and federal administrations.

Reinforcing this territorial initiative, the Hon. John Munro in 1983 announced that an elected member of the Executive Council would be appointed Chairman of the Financial Management Board of the Government of the N.W.T. Mr. Butters assumed this responsibility on June 1, 1983. The Financial management Board is made up of Executive Council members who determine government budget and funding allocations and expenditures in keeping with the program priorities identified by the Legislative Assembly.

Mr. Butters continued his efforts to resolve the problems created for northern residents associated with the announced intention of the federal government to begin the taxation of northern allowances beginning January 1, 1984. Mr. Butters met and spoke with the Hon. Marc Lalonde on a number of occasions to present and obtain federal consideration of the special situation experienced by the residents of the Northwest Territories.

To research and substantiate this contention, Professor Richard Bird of the University of Toronto was commissioned to report on the matter.

Professor Bird's report, co-authored by Enid Slack and entitled 'Report on the Taxation of Northern Allowances', identified grounds for amendment of the federal regime and suggested new concepts of indexation for taxing persons residing and working in Canada's North.

In December, John Munro, Minister of Indian and Northern Affairs, announced on behalf of the Honourable Marc Lalonde, that the special tax remission for housing and travel benefits received by employees in Northern Canada would be extended indefinitely.

Mr. Butters actively pursued the taxation issue related to a reassessment of prior years' tax on a small number of hunters and trappers in the Northwest Territories. This action, complementing representations made by other individuals and organizations, resulted in the successful forgiveness of the reassessments by Revenue Canada.

In support of the northern trapping industry, department officials under Mr. Butters' direction, developed and recommended to the federal government a special taxation regime for the trapping industry, analogous to the regime developed for farmers and fishermen, which proposes that certain capital and operative costs associated with the trapping industry be tax deductible.

During 1983, the NWT Minister of Finance continued to press for the implementation of the concept of formula financing for the Northwest Territories and to identify the elements comprising the federal program of 'discretionary funding', developed to assist the territorial government to fund the capital costs imposed on communities where large scale exploration or development activity is occurring.

The Minister of Finance, has Executive responsibility for the Department of Finance. The major function of the department is to give overall direction in financial management to the government and to provide the basic accounting and financial service system in support of government operations.

#### *Administration*

The administration division is responsible for the overall direction and co-ordination of the Department of Finance. The division works with other divisions of the department to develop program planning and resource requirement forecasts, implement approved plans through the main estimate budget process and to control implementation through expenditure control and variance analysis.

The division provides departmental services relating to personnel administration and maintains departmental expenditure records.

#### *Treasury*

The treasury division is responsible for collecting and reporting on all government revenues. It provides a central debt collection service to maximize the recovery of debt owed to the government; administers the provisions of the Income Tax, Petroleum Tax and Tobacco Tax Ordinances and audits the records of agents who collect the taxes.

In addition, it administers and co-ordinates the government's insurance and risk management program, co-ordinates banking and cash management functions and provides technical support in development of fiscal policy and economic analysis.

During 1983, emphasis was placed on the development of policies and improvements to procedures to more fully utilize the benefits available from the financial information system.

New government payment and collection policies were introduced which, ensuring northern businesses received maximum benefits, provided improved cash management processes throughout the government.

During 1984, emphasis will be placed on development of information and systems related to formula-based financing and continued examination of the existing revenue base. More effective revenue management will be emphasized by introducing procedures which provide more accountability for revenue management at the department level.

#### *Comptrollership*

The comptrollership division is responsible for the preparation of financial management information, including the Territorial Accounts; for developing, co-ordinating and implementing financial policies and procedures, which provide for the effective control and reporting of all government expenditures; and for payment of all government employees.

During 1983, this division concentrated on orientation of departmental and regional finance operations in the effective use of the financial information system. Revisions were made to financial regulations, policies and procedures required by the Financial Administration Ordinance.

In 1984 the major objective will be the development of financial regulations and accounting policies aimed at further improving financial administration across the government.

#### **Financial Management Secretariat**

The Financial Management Secretariat provides advice and support services to the Financial Management Board.

The Honourable Tom Butters assumed the chairmanship of the Financial Management Board on June 30, 1983, a position previously held by the Commissioner.

The secretariat is responsible for development of the main estimates, five-year program forecast, supplementary appropriations and quarterly variance reports, negotiations with the federal government for territorial funding, and provision of administrative and working support to the board.

The program budgets and analysis section is responsible for providing senior level budget management and counsel to the government, primarily focussing on the budget cycle.

In 1983, this section published main estimates preparation instructions designed to allow easier understanding of the government's budget and resource allocation processes. To complement this process, the section also began a training program for the purpose of improving financial management and the understanding of government financial systems.

Other major projects undertaken by the section in 1983 included a complete revision of the Financial Management Board handbook, incorporation of the government priorities process into the budgeting system, five year program forecast instructions designed to improve long range planning, production of a quarterly variance reporting package for board members and a study on the computerization of the budget process.

The financial planning and analysis section is responsible for providing senior level financial management and advice to the government.

In 1983, the section resumed negotiations with the federal government following the announcement by the Minister of Indian Affairs and Northern Development of the department of a formula-based approach to territorial financing.

With the proclamation of a new financial Administration Ordinance in September, 1982, the Financial Management Board was given responsibility for evaluating programs as to economy, efficiency and effectiveness. To support the board's effort in the section began development of a performance measurement and evaluation system, to improve program delivery.

## Audit Bureau

The Audit Bureau, reporting to the Deputy Commissioner, provides an internal government audit function and is responsible for independently reviewing departmental operations.

Another major responsibility of the Audit Bureau is the performance of attest audits of Government of the N.W.T. financial claims and cost reports, prior to their provides financial audit services to departments with respect to contributions to external organizations.

The Auditor General of Canada, in his report to the Legislative Assembly, recommended that the Audit Bureau acquire computer audit expertise. Action was initiated to acquire and develop this capability.

In addition to an extensive audit program at headquarters, the bureau performed approximately 35 audits in 14 communities throughout the N.W.T. during 1983.

## Personnel

The Department of Personnel is responsible for the planning and coordination of personnel management within the public service of the Government of the Northwest Territories.

### *Personnel Services*

The personnel services division is responsible for providing recruitment and job evaluation services to all Territorial Government departments.

Of the 764 positions staffed in 1983, 647 northerners were hired while 117 came from outside the Territories. This compares to a total of 888 positions filled in 1982, of which 768 were Northern hires. Of the positions staffed in 1983, 134 were teaching positions.

During 1983, 29% of all positions staffed were filled by native Northerners while 85% of all positions staffed were filled in the North. Total staff turnover was 19%, down considerably from the 24% turnover figure in 1982 and the 32% figure in 1981. Although the state of the Canadian economy was partially responsible for the reduction in turnover, it appears that the Southern recruitment restraint policy is now paying long term dividends and is helping to reduce turnover at both middle and senior management levels.

## Staff Relations

A number of major policy and legislative changes took place in 1983. Wage restraint legislation was implemented in April 1983 for the Public Service Association and in September 1983 for the Teachers' Association. The Legislation generally extended collective agreements for two year periods with salary increases of 6% in the first year of the contract and 5% in the second year.

The Public Service Ordinance was amended to further define the political rights of employees.

A conflict of interest policy was implemented.

Implementation of the staff accommodation policy resulted in the sale of over 14 housing units in both Yellowknife and Fort Smith and the dropping of a number of major leases with landlords who currently provide housing to public servants.

## Staff Development and Training

During 1983, 65 courses were conducted throughout the public service with 767 employees receiving training. Many employees were also enrolled in correspondence and university extension programs.

Although the education leave program was subject to economic restraints, 17 employees were enrolled in continuing programs leading to degrees or professional designations. There were no new enrolments in education leave during 1983, although six employees proceeded on short-term leave to complete academic programs of one semester duration.

The in-service training program continued to offer long-term Northerners employment opportunities through training. The number of employees in the program increased to approximately 70. This program has proven to be an effective method of bringing Northerners into officer level and technical positions in all government departments and all regions. Eighty-four percent of trainees have been native Northerners.

The office of native employment provides counselling services to Northern native people on employment opportunities with the Government of the Northwest Territories. The office also serves the needs of native employees by providing counselling services and identifying training opportunities for career development. The number of native employees has remained fairly constant for several years and represents 33% of the work force.

## Finance and Administration

The finance and administration division coordinated and monitored all aspects of departmental resource utilization through budget forecasts and internal resource management techniques.

The computerized Personnel Information System was enhanced to include position control data.

## Economic Development and Tourism

### Economic Function: General Government Services

#### *Minister's Introduction*

The Minister, the Honourable Arnold McCallum reviewed departmental goals, objectives and organizational structure.

At the February 1983 session of the Legislative Assembly, Mr. McCallum indicated that formalized goals, objectives and strategies would be prepared. At the May session, Mr. McCallum tabled the goal, objectives and strategies approved by the Executive Council.

At the same session, the Assembly was informed that a department action plan would be developed to meet the new approaches. Rather than being simply an internal exercise, it was decided to seek wide public input into the actions required. To this end, the minister widely circulated the goal, objectives and strategies of the department, requesting public input for the action plan.

An in-depth review of organization structure was undertaken with a new structure approved by the Executive Council in October. An assistant deputy minister responsible for program delivery was appointed. The main operating arms of the department in headquarters will be the divisions of business development and tourism and parks. Separate planning and policy groups have been established, reporting directly to the deputy minister.

Increased emphasis will be placed on the development potential of both non-renewable and renewable resources. The needs and development of northern business will be a high priority as will the continued promotion and development of the tourism industry. The primary role of regional offices in program delivery will be recognized in the organization structure and program development.

A four year, \$21 million economic development agreement between the Federal Government and the Government of the N.W.T. was signed in December 1982. During 1983, three subsidiary agreements were concluded: \$5.51 million for human resource development, \$10.75 million for domestic market development and \$4.63 million for natural resource development.

#### *Planning and Resource Development*

The planning and resource development division is responsible for economic planning and economic and policy/program analysis for the department. In this capacity, the division promoted business and employment opportunities. In addition to being responsible for the action plan development and review committee, the division played a key role in the joint needs assessment committee. During 1983, efforts were focussed on assisting the local economy to cope with the national economic recession.

The economic planning secretariat continued work on developing a data base of economic indicators, information sources and potential revenues from resource development projects. Keewatin region economic base study and Beaufort Sea hydrocarbon development revenue analysis were done. In addition to the completion of manpower and business development policies, other initiatives included the development of financial assistance to business policies and programs, a tourism policy and strategy and a renewable resource use policy.

The mineral and petroleum resources section focussed on the review and monitoring of resource projects to maximize northern participation and benefits. In addition to the development of socio-economic agreements, the section provided the opportunity for Territorial Government input into Canadian oil and gas lands administration exploration agreements. The section also acted as departmental co-ordinator for participation in the federal environmental assessment and review of the Beaufort Sea hydrocarbon project. The section served on the intergovernmental working group on mining, the northern minerals advisory committee and the regional environmental review committee.

The division had input on development of a comprehensive N.W.T. Business Directory for promotion of northern goods and services, research in the areas of prospector assistance and rotational assistance, development of the department's new goals and objectives and an action plan to implement the department's new thrusts.

#### *Commerce*

The commerce division comprises five services: small business development, co-operatives, commercial enterprises, arts and crafts and financial services.

#### *Business Development*

The business development service provides financial and technical assistance to small businesses including commercial renewable resource harvesters and arts and crafts producers.

Liaison is maintained with resource developers to ensure maximum participation of local entrepreneurs in spin-off business opportunities and the co-ordination of resource developers' initiatives regarding local business participation.

Two financial contribution programs are administered by the business services section. The business development and the financial assistance to business programs stimulate business development by assisting in the financing of capital assets for new or expanding businesses and working capital for businesses in financial difficulties.

#### *Financial Services*

During the 1982/83 fiscal year, the Eskimo loan fund and business loans and guarantees fund boards were amalgamated to improve administrative efficiency. The board approving nine loan applications under the Eskimo loan fund totalling /1,798,360. A further 64 loans totalling \$4,301,489 were authorized under the Territorial Government's business loans and guarantees fund.

The Special ARDA program, which provides financial contributions to businesses and organizations, particularly native development corporations, approved 49 contributions amounting to \$2,292,755. Monies were allocated in the following areas: primary producing activities, research and planning, and commercial undertakings.

#### *Renewable Resource Development*

Tangible growth in the renewable resources sector was hampered over the past year by international events over which the local industries had limited influence. Fish and lumber prices were generally lower due to depressed world demand and seal skin harvesting declined drastically as a result of the ban on the importation of Canadian seal skins by some European countries.

The commercial fishery experienced a decline in prices. The prices for whitefish, the predominant commercial species, averaged 10 percent less than the year before. This situation, combined with higher operating costs, would have resulted in reduced incomes had the department not implemented a price support program. During the fiscal year approximately 1,550,000 kg of fish were harvested on a commercial basis. The department continued its efforts to improve harvesting and marketing of the Northwest Territories fisheries resources.

The N.W.T. forest industry is total production was 30 percent below that of the previous year. The largest lumber producer, Slave River Sawmill Ltd., ceased production due to a fire in August, 1983.

## Arts and Crafts

The economic decline throughout Canada also had an adverse effect on the art and craft industry. To counter this, the department provided the services of a consultant to two cooperatives that are major sculpture producers. It also developed a closer working relationship with the federally supported agencies which encourage northern art and craft production.

## Co-operatives

The co-operative system in the N.W.T. maintained its position over the past year despite a downturn in the Canadian economy. Sales and other revenues totalled \$22,857,175. A net savings of \$405,991 was realized. Permanent employment remained at 349 positions and total direct wages and benefits exceeded \$3.5 million. During the year, a proposal was completed for joint federal/territorial funding of field services support to co-operatives.

In addition, the Hillside Housing Co-operative in Frobisher Bay and the End of the Road Co-operative in Inuvik were incorporated. The Borealis Housing Co-op constructed approximately 50 units in Yellowknife.

## Commercial Enterprises

Efforts by the department to privatize craft shops were somewhat hindered by the estimated 30 to 40 percent decline in arts and crafts sales across Canada.

## Manpower Development

The division provides a focal point for employment, industrial training, apprenticeship, career development and related support programs for Northerners in business and industry.

Emphasis was placed on employment opportunities in the oil industry, where approximately 1,000 northerners were employed as of September 1983.

The short term employment program (S.T.E.P.) is the Territorial Government's job creation program. Under the supervision of the regions, this program resulted in expenditures of \$2 million in the N.W.T. economy at the community level.

The petroleum and mining industries worked with the division in developing methods to train and employ northern labour.

The apprenticeship program continued to develop skilled tradesmen for northern industry through a combination of on-the-job and in-school training. As of September 1983, there were 487 trainees in the designated trades across the Northwest Territories. Of these, approximately 90 were employed by the Territorial Government.

Fifty-seven apprentices completed training and obtaining certification as journeymen. Of these 36 obtained interprovincial qualification under the "red seal" program.

Small engine mechanics and air conditioning training courses were added to the apprenticeship program. A vocational high school program was introduced into the high school system. The first graduates of this program will enter the workforce in 1985.

## Tourism and Parks

A five year plan for developing the tourism industry in the Northwest Territories were approved by the Executive Council. A comprehensive guide training program for Northwest Territories guides was also begun.

In direct response to requests from the N.W.T. Travel Industry Association, the 1984 edition of the Explorers' Guide will be published by Outcrop Ltd. of Yellowknife.

Travel Arctic entered into negotiations with Manitoba, Saskatchewan and Alberta to form a new co-operative marketing organization to sell travel programs. Travel Arctic continued to market programs through the Canada West organization and worked closely with the N.W.T. Travel Industry Association and the six tourism zones associations.

The Baffin region held the founding meeting of its zone travel association.

## Public Works

### Economic Function: General Government Services

#### Minister's Introduction

On March 1, 1983, Arnold J. McCallum assumed responsibility for the Department of Public Works. Under his direction, the provisions of the northern preference policy were carried out. In the last complete fiscal year, 838 construction contracts with a value of some \$21 million were awarded to northern contractors.

The government set a priority on transfer of the highways reconstruction program from the federal government, and also made submissions to his federal counterpart on the federal northern roads policy to ensure the needs of N.W.T. residents were met.

During 1983, the minister directed a review of winter roads to Nahanni Butte and Trout Lake. As a result, winter roads will be constructed in the winter of 1983/84. Contracts for construction have been negotiated with the northern contractors who now have road maintenance contracts in the area. The roads are expected to open in January 1984.

#### Directorate

The Department of Public Works is responsible for designing, building, operating, and maintaining all buildings and works required by the Government. This includes the operation of ferries, vehicles, heavy construction equipment, and the maintenance and reconstruction of roads and highways.

The directorate includes the senior management of the department and the staff divisions responsible for contracts and capital planning, finance, and policy and planning.

## Architecture

A new school at Norman Wells and the restoration of Breynat Hall in Fort Smith were completed in 1983. Contracts for construction in 1984 of new schools in Sanikiluaq, Fort Franklin, Snowdrift, and on the Hay River Reserve were tendered in 1983. The building at Fort Franklin will incorporate a multi-purpose hall for community use.

Planning and construction of community recreation facilities and multi-purpose halls continued. Community halls at Fort Resolution and Cape Dorset were completed in 1983. Construction of community halls at Sachs Harbour and Tuktoyaktuk is underway. Planning for new community halls for Chesterfield Inlet and Repulse Bay which would include hamlet office space and recreation facilities was begun.

A new government computer services building at headquarters neared completion in 1983. Wildlife offices in Coppermine, Arctic Bay and Fort McPherson, and various community facilities in Pangnirtung, Broughton Island, Snowdrift and Chesterfield Inlet were completed.

## Engineering

The engineering division ensures the provision of potable water and the disposal of sewage and solid wastes. It is also responsible for the construction of tank farm installations to facilitate the orderly marketing of petroleum products by the Department of Government Services.

During 1983, the division was also concerned with additional facilities for the distribution of natural gas in the Norman Wells area, as well as high temperature heating systems, waste heat recovery systems and central steam plants.

Value of construction projects managed by the division was about \$5,600,000.

An extensive program of upgrading water and sewer installations was carried out in Frobisher Bay, along with repair of dykes on the sewage holding pond. Engineering design began for water storage reservoirs in Pangnirtung and Broughton Island. District heating systems in Frobisher Bay and Inuvik were upgraded. The construction of a new community power plant in Sanikiluaq was begun.

Expansion and upgrading of the Tuktoyaktuk fuel storage facility and modification and upgrading of the Pond Inlet fuel storage facility were started. Badly corroded portions of the gasoline pipeline in Whale Cove were replaced. Construction of facilities in Fort Franklin, Lac La Martre, Paulatuk, Coppermine and Gjoa Haven were completed. A fuel testing facility is being established in Yellowknife. The Rankin Inlet airport fuel facility accidentally destroyed in 1982, is being re-constructed.

## Highways

Two roads maintenance contracts, lasting three years, were negotiated with local contractors in 1983. The Fort McPherson Incorporated Band Ltd. commenced work on 144 kilometers of the Dempster Highway and Beaver Enterprises Ltd. of Fort Liard commenced work on 147 kilometers of the Liard Highway.

In 1983 the Mackenzie River Valley winter road was extended beyond Fort Norman to Norman Wells. Also, in the winter of 1983/84 winter roads into Nahanni Butte and Trout Lake will be opened.

Asphalt surface stabilization was carried out on the road between Rae and Edzo. The Yellowknife Highway and Ingraham Trail at Yellowknife and the Hay River Highway in the town of Hay River were resurfaced.

A major modification to the ferry M.V. Merv Hardie in 1982 enabled the ferry to operate as late as January 17, 1983. This established a new record and no disruption to road traffic during freeze-up for the residents of Yellowknife, Rae-Edzo and Fort Providence resulted.

At the Peel River crossing the cable ferry M.V. Abraham Francis had to be temporarily replaced by a tug and barge ferry arrangement in July and August in order to rectify mechanical deficiencies to the cable ferry. It as subsequently re-installed and continued service to season's end.

Management of more than 70 land development, road construction and drainage projects was undertaken in 40 communities and studies were carried out on several airstrips for the Department of Local Government.

## Operations

The operations division comprises three sections: buildings and works, mobile equipment and accommodation services.

Maintenance work awarded to local contractors was increased by breaking down contracts for tendering and limiting work performed by DPW staff.

During 1983, telephone fire alarm systems were installed into some western communities. Central heating systems in Inuvik and Frobisher Bay were upgraded for reliability and safety and water and sewer systems in Resolute Bay were improved. A tank farm maintenance upgrading program was started. Work on upgrading the gas line at Norman Wells was begun.

The program to convert vehicles to use propane fuel realized savings of up to 40%. This program will be expanded to most communities where propane fueling facilities are available.

The accommodation services section, in conjunction with the Department of Personnel, finalized the plan for eventual withdrawal from staff housing in Yellowknife, Fort Smith and Hay River. Fourteen houses were sold to employees and negotiations are underway for the sale of 45 more.

## Energy Conservation

The energy conservation division addressed the growing need for information on energy conservation techniques, their performance and cost effectiveness. A public information and enquiry service was provided on the products and ways and means of reducing energy costs.

The division has undertaken 24 conservation and renewable energy development and demonstration agreement (CREDDA) projects. A cost-shared program with the federal government, CREDDA was established to encourage the use of renewable energy resources, to conserve energy and make energy use more efficient.

Projects started in 1983 included the upgrading of 62 N.W.T. Housing Corporation units in Rankin Inlet and Cambridge Bay and St. Jude's Parish Hall in Frobisher Bay; heating of the town of Fort Smith's water supply with wood fuel and the construction of 50 super energy-efficient houses in Yellowknife.

## Renewable Resources

### Economic Function: Economic Development - Other

#### *Minister's Introduction*

During 1983, Minister of Renewable Resources Richard Nerysoo encouraged the participation of hunters and trappers in program development and resource management decisions.

The minister announced special financial support for the N.W.T. Hunters and Trappers Federation to protect the trapping industry in the Northwest Territories. Special funding was also provided to the Beaufort and Mackenzie Delta hunters and trappers associations to enable their effective participation in the Beaufort environmental assessment and review process.

The environmental planning and assessment division, under the direction of the Minister, took the lead role in land use planning negotiations with the federal government. The division, in its second year, was also actively involved in a number of other important issues including water management planning and participation in the Beaufort environmental assessment and review public hearings.

#### *Wildlife Management*

A management plan for the wood bison herd in the Mackenzie Bison Sanctuary was prepared and released for public review and comment.

A polar bear tagging program continued on the northeast Baffin Island coast and some radio collars were placed on bears in the Beaufort Sea area. Computer modelling sessions involving several government agencies and universities continued to examine the effects of harvest levels.

Assessment of harvest levels and regulations continued in response to new information and requests from user groups. A more complete understanding of resident hunting pressure was obtained from annual questionnaires returned by sport hunters. Progress continues in the development of a system to monitor native harvesting levels through the cooperation of regional native organizations.

Muskox surveys were conducted in the Kitikmeot and Inuvik regions. Most populations appear to be doing well. A workshop on muskoxen, involving computer modelling and review of techniques, led to some revised research objectives which should result in better understanding of muskox ecology and possible levels of harvest.

Extensive gyrfalcon surveys took place in the central and eastern Arctic. A permanent study area was set up to monitor nesting rates and to eventually examine early mortality.

Particular attention was paid to the caribou - the most widely harvested wildlife species in the N.W.T. Unusually high numbers found in 1982 in the Kaministiquia herd were confirmed in 1983. In addition, surveys were conducted on the Bluenose and Wager Bay herds.

The caribou tagging program continued in the Baffin region. Other studies involving habitat, animal condition indicators, and reproductive rates continued in the Keewatin and Fort Smith regions in cooperation with federal and provincial agencies.

A grizzly bear wildlife habitat study was begun in the Beaufort Sea MacKenzie Delta area. This study focused on the development of techniques to define grizzly bear denning habitat. A large-scale mapping program, designed to document the distribution of wildlife species in the Inuvik region began.

The second year of a bear detection and deterrent study was completed. A preliminary training program for wildlife officers was developed and implemented.

A Keewatin caribou monitoring program was undertaken for the fifth consecutive year and a five year review of the program was completed.

In conjunction with the Canadian Wildlife Service, the wildlife management division established a habitat working group. This group is comprised of representatives from both agencies and is designed to facilitate cooperative habitat management efforts in the Northwest Territories.

## *Environmental Planning and Assessment*

The environmental planning and assessment division, is responsible for the department's response to major resource development projects and planning issues as they relate to land and water management.

Activities in 1983 centred on review of renewable resource management issues posed by proposed resource development projects, the largest including a proposed hydro development on the Slave River and the Beaufort Sea/Mackenzie Delta oil and gas development.

The division developed a renewable resource compensation policy for public review which will provide protection, both to the environment and to resource users, from impacts of industrial development.

The division has been primarily responsible for negotiation and development a land use planning program in the Northwest Territories. The northern land use planning program is a joint initiative of the Federal Government through Indian and Northern Affairs and the Government of the Northwest Territories.

The division also provided background work and represented the interests of the government in water management issues, including preparation for interjurisdictional negotiation of agreements for the Mackenzie River Basin.

In response to government priorities, a program was developed to ensure that communities and renewable resource users are informed about proposed resource development projects and issues.

#### *Pollution Control*

The goal of the pollution control division is to maintain a high standard of environmental quality. A program of prevention, monitoring and enforcement is designed to enlist the cooperation of industry and the general public.

A joint study was carried out with other government agencies for radionuclides and metals at Port Radium and Rayrock Mine abandoned waste sites. A surface water quality data base to identify the extent of acid deposition in surface waters in the Northwest Territories is also being developed.

Resupply of Lupin and Salmita Mines by winter road began in 1983. A series of fuel spills occurred over a short period of time, due to overturned tanker trucks. The principal causes of the accidents, as well as the short-comings in the spill response program of the operator, were identified and discussed with company officials. Changes introduced as a result of these discussions resulted in a sharp reduction in the number of spills and improvement in the operator's spill response team. The division was instrumental in forming a committee of those involved in the project to review the problems experienced and make recommendations for elimination or reduction of spills.

Permits for use of commercial or restricted pesticides were sought by several communities and individuals in 1983. In addition, domestic insecticide foggers (for use in combatting mosquitoes) were introduced to the Territories and large numbers were purchased by citizens for private use. The situation was monitored and consideration is being given to imposing tighter control on the types of insecticides used.

A more comprehensive environmental protection program was instituted. Wildlife officers acted as pollution control inspectors.

#### *Field Services*

Top priority was placed on conservation education, resulting in a series of one-minute television spots, pamphlets, posters and reports (including translations); a National Wildlife Week poster contest, which attracted 1800 entries from across the Northwest Territories; and the publishing of the 1983 edition of a national publication, Canadian Wildlife Administration. Work on a trappers manual, scheduled for publication in 1984, was begun. The department's firearm safety program continued with the production of a student manual.

The field services division is also charged with developing the renewable resource economy. Assistance programs which support close native ties with wildlife are administered. Seventy-nine applications for funding under the outpost-camp program were approved and assistance was given to approximately 1200 persons who desired to gain a living on the land.

During the 1982/83 fur season, 3,167 trappers sold furs valued at \$2,794,711.

Several regulation changes were initiated in response to requests from the public.

### **Energy, Mines and Resources**

#### **Economic Function: Economic Development - Other**

The Energy, Mines and Resources Secretariat provides advice to the Minister, Mr. Nerysoo and to the Executive Council on policies for energy, mines and resource development and is functionally responsible for formulating strategies and policies.

The secretariat manages and directs the preparation of government positions and reviews programs, focussing on their effectiveness in meeting government objectives. In respect to resource development, it assesses the effectiveness of legislation and existing organizational structures and recommends changes if required.

Considerable attention was paid to the Beaufort Sea hydrocarbon production and transportation proposal. In February 1983, the Minister presented on behalf of the Executive Council the Territorial Government's environmental impact statement deficiency report, which listed a number of major socio-economic and environmental areas requiring supplementary information from industry.

A ten-year incremental plan for expansion of the venue of the N.W.T. Public Utilities Board was developed and, subsequently, approved by the Executive Council. The plan recommended that the utility board be given powers associated with general utility supervision, licensing and facility planning. Also, an energy planning commission would be created and charged with assessing the long-term benefits of alternative energy options.

Appearing before the National Energy Board inquiry into the operations of the Northern Canada Power Commission, the minister stated that the Territorial Government's goal was to establish an electrical power utility financially and administratively well founded, responsive and prepared to meet the challenges of tomorrow.

A number of policy-related steps were taken during 1983 since the promulgation of the resource development policy in October of 1982. Mr. Nerysoo made available some \$370,000 for the funding of Development Impact Zone (DIZ) groups. The Slave River Development Impact Zone Society, incorporated under the N.W.T. Societies Ordinance in June, was given approximately \$14,000 to operate for the remainder of the year. The Beaufort Sea/Mackenzie Delta Development Impact Zone Society, incorporated in July, was given \$135,500 by the minister and \$10,000 each by Esso Resources and Dome Petroleum. The money will be used for wages, office rentals, administration supplies, and to pay for specific work plan requirements.

The Executive Council did not support Gulf Canada Resources' application to establish an exploration base at Stokes Point, Yukon. Instead, it requested that McKinley Bay be considered for such a base because N.W.T. residents would be provided greater business and employment benefits. It recommended that the federal government centralize harbour development. The establishment of an exploration base on the N.W.T. coast line in the Beaufort, particularly at McKinley Bay, would allow the utilization of an established facility on a temporary basis. In turn, the three governments could then work out a long term solution to harbour development on the coastline.

The minister and the Executive Council approved research and planning strategies and priorities under the Northern Oil and Gas Action Program (NOGAP) for a seven year period, 1984-1991. NOGAP is a federal research and planning program administered by the Department of Indian and Northern Affairs. Territorial Government submissions must be reviewed, supported and approved by Indian and Northern Affairs and federal control agencies. The minister expected a decision to be made on the Territorial Government's submission by the end of 1983.

Mr. Nerysoo attended a provincial mines ministers conference and the meeting of the council of provincial energy ministers in Regina during September. Provincial ministers agreed to hold the 1984 conference of mines ministers in Yellowknife with the Government of the N.W.T. as host and chair for the conference. Also, the minister will chair the 1984 meeting of the council of provincial energy ministers.

Mr. Nerysoo concluded an agreement with the Honourable Jean Chretien which would see both Canada and the Government of the N.W.T. funding a \$125,000 N.W.T. natural gas and propane study. Communities to be considered include Fort Smith, Fort Resolution, Pine Point, Enterprise, Hay River, Rae-Edzo, Detah and Yellowknife in the Great Slave Lake area; and Inuvik, Tuktoyaktuk, Fort McPherson and Arctic Red River in the Mackenzie Delta area. The study calls for an estimate of the market potential and comparative economics of natural gas and propane in these communities for residential, commercial, industrial, transportation, mining and electrical generation sectors. A second objective of the study is to estimate the related capital, operating and maintenance costs of such service.

### *Resources*

The Northern Affairs Program of the Department of Indian Affairs and Northern Development plays a role in the management of resources in the Northwest Territories and administers such legislation as the Territorial Lands Act, Arctic Waters Pollution Prevention Act, Northern Inland Waters Act and the Oil and Gas Production and Conservation Act.

### *Mineral Exploration*

Mineral exploration activity for 1983 was comparable to 1982. One hundred and one projects were identified by mid-September compared with a total of 125 for 1982. Forty were high cost projects, six mine development and 34 involved diamond drilling compared to five and 45 respectively for the previous year.

To the end of 1983, 420 mineral claims covering 270,000 hectares in the N.W.T. were recorded. A total of 42,030 mineral claims covering an area of 3,204,000 hectares remained in good standing at the end of 1983.

## *Renewable Resources*

### *Land Resources*

Activity in the Beaufort Sea remained at a level comparable to 1982. During 1983, 15 approvals were issued for offshore island construction and dredging. Approximately 200 land use permits were issued compared to 210 in 1981 and 154 in 1982. The increase can be attributed to activities of oil and gas exploration in the western area of the N.W.T. The number of land leases issued in 1983 was 145 compared to 127 in 1981 and 99 in 1982.

Permits required for the construction of the N.W.T. portion of the Norman Wells/Zama pipeline were issued and it is expected that all land tenure agreements for the pipeline facilities and the Norman Wells expansion program will be finalized in early 1984.

Late in 1983, the production of a land use guidelines handbook for access roads and trails was undertaken and publication was targeted for mid-1984. Granular resource management continued to be a major point of interest.

### *Water Resources*

In 1983, 182 water authorizations were issued for short term projects (up to 270 days duration), requiring relatively small amounts of water (up to 50,000 gallons per day).

In 1983, nine licences were issued and 12 public hearings were held throughout the N.W.T.

In 1983, the federal lab analyzed 2,300 samples and performed 33,000 tests to support monitoring and inspection functions generated by water licences and authorizations.

The division, through its participation in various working groups, engaged in long term study programs to assess the biological resources and sensitivity of the ecosystem to changes in the hydrological regime.

## *Forest Resources*

The Liard management unit inventory report is under review. The inventory data for the Trout and Slave management unit are being reviewed on and generalized reports on these units should be drafted within the next year.

Three short reports were prepared upon completion of field measurements during the summer of 1983. The first report, "Assessment of Wood Chips for IPL Slope Stabilization", was an assessment of available chipwood volumes from selected sites along the proposed Norman Wells Pipeline route. The second report was an assessment of the fuelwood potential in the Mosquito Creek area and a suggested development plan was prepared. The third report assessed the fuelwood potential in the Fort Smith area and a report was prepared for district, town and band use. The town of Fort Smith is converting a heating unit at their water plant to use wood.

Lumber production decreased. Fuelwood increases were due mainly to increased commercial demand.

### *Forest Fire Management*

During the 1983 fire season, a total of 333 wildfires were reported: 208 in fire action zones and 125 in observation zones. A total of 289,653 hectares burned, including the 29,668 hectares burned in fire attack zones, costing \$6.5 million for fire suppression activities.

Most fire activity occurred in the Mackenzie River Valley. Double the normal number of fires were reported in that area. Yellowknife and the Great Slave areas reported only one-half the normal incidence.

### *Northern Benefits Committee*

In August 1983, the Minister of Indian and Northern Affairs announced the signing of 19 exploration agreements and the formation of a regionally based northern benefits committee. The committee will review the action plans submitted by industry in support of their work program commitments in exploration agreements and provide for the integration of both federal and territorial regional, social and economic objectives within the northern benefits component, ensuring maximum benefits accrue to northerners.

## Education

### Economic Function: Education

#### *Minister's Introduction*

Minister of Education Dennis Patterson travelled extensively throughout the Northwest Territories and continued to work closely with local education authorities on the on-going changes required within the education system.

In September the Legislative Assembly made major changes to the Education Ordinance. An amendment to establish education divisions and to create divisional boards of education and community education councils was approved. The formation of education divisions will not be mandatory; local education authorities must submit a petition requesting that a division be formed and that a divisional board of education be established. The amendment was recommended by the Special Committee on Education and was identified as the top priority by the task force on implementation of the special committee's report.

During 1983 policy guidelines were developed for determining the school calendar. In the future - if attendance levels are satisfactory - it will be possible to have less than 190 in-school sessional days. This will make it possible to recognize traditional family seasonal activities and will enable students to participate in them. Such a provision must be proposed by the local education authority and will require the approval of the Minister of Education.

Major emphasis for in-school program development in 1983 was placed on bilingual education and high school vocational programs.

About \$1,000,000 was spent to support the development of bilingual education programs in 35 communities. The program featured the involvement of local residents as resource people in the developmental process. Projects are underway in all the major Dene languages and additional publications have been produced in all indigenous languages.

A teacher's guide book and lesson units were developed for English as a second language/dialect programs. This program developed over the last few years, will address the special needs of the majority of students in the N.W.T. who come to school with English as a second language.

An Inuktitut curriculum for grades 2-6 was completed by a committee of Inuit teachers representing three regions. A grade 2 program has already been started in the schools and programs for grades 3-6 should be completed by the end of the 1983-84 school year.

The development of Northwest Territories high school programs was a major priority during the past year. In March, the Minister of Education authorized the issuing of a Northwest Territories high school graduation certificate. The certificate will be granted to N.W.T. students who meet N.W.T. graduation requirements.

Grade 12 students will be required to write Alberta provincial high school diploma examinations beginning in the 1983-84 school year. Because N.W.T. high schools follow the Alberta program of studies and credits are awarded by the province, Territorial students must write the examinations to qualify for an Alberta diploma.

A new community-based occupation program, was started in Baker Lake, Edzo and Yellowknife. The goal of the program is to prepare people to find employment in their own communities.

There were dramatic increases in the number of students enrolled in the Eastern Arctic teacher education program. Over 100 people are being trained in either the field-based program or on campus in Frobisher Bay with generous assistance from the Donner Foundation of Canada.

Generally it was a good year for education in the Northwest Territories. Record numbers of students, particularly native students, were accepted at post secondary institutions. School attendance improved, aided by the efforts of local and regional education authorities. A new decentralized college system is being actively planned by the Thebacha board of governors. Divisional boards, a new level of education authority, will permit remote communities to exert more control over their schools. There is revived interest in increased use of native languages.

#### *Program Services*

The program services division concentrated on the extensive support given to bilingual education and enhancement of high school vocational programs.

The division provided extensive support work on the development of the N.W.T. high school graduation certificate program.

In September 1983, several more vocational programs designed by the Department of Education were implemented in three N.W.T. high schools. Vocational program development will continue over the next few years and a high priority will be attached to the development of N.W.T. academic programs. These programs will be designed to meet the special needs of N.W.T. pupils.

As with high schools in southern Canada, N.W.T. high schools receive a number of pupils who are not able to cope with the programs required for graduation. In the past these students usually became drop-outs. In order to meet the needs of these pupils, the department began designing community occupational programs. Certain aspects of these programs vary from one community to another, but other aspects such as life skills are common to all.

In response to the Territorial Assembly, the Department of Education began developing special drug and alcohol programs for N.W.T. schools in cooperation with the Departments of Health and Social Services. Native groups and other agencies concerned with these problem areas will be included in the process. As much as possible, a community approach will be used in the design of the programs.

\$100,000 was provided to high schools for the purchase of micro-computers.

Contracts were let to develop native language capabilities in micro-computers. An Inuktitut modification is now available that will permit computer assisted introduction with an Inuktitut display on the TRS 880 Model III, as well as word processing in Inuktitut. A similar modification is also available for the Slavey language.

In 1983, the federal Department of Communications turned over to the Department of Education eight satellite receiver dishes, previously used for Anik "B" experiments. Some of these dishes will be used to receive educational programs from the Knowledge Network in British Columbia.

#### *Adult Vocational Training Programs*

The Territorial Government decided in June 1983, to consolidate training activities within the Department of Education. This change will involve the transfer of resources from other government departments. The assistant deputy minister in charge of this area was also given the mandate to respond to special training needs generated by resource development activity.

Thebacha College continued its progress towards full accreditation with the addition of a campus in Frobisher Bay. The board of governors of Thebacha College were provided with the terms of reference they required to play a more meaningful role in determining the college's direction. Their major accomplishment during the year was the submission of a strategic plan to guide the college through the first years of operation.

The second year of the public and business administration and social services diploma programs were successfully implemented. The college also developed an academic studies college preparation program to upgrade students who were not academically prepared to enter the diploma courses.

The College offered, through extension programs, over 60 courses including English language training, driver training, cooking, welding and basic office procedures.

#### *Finance and Administration*

The Department of Education's operating budget for the 1983-84 fiscal year was \$72,104,000. This O and M was broken down into six major activities: administration - \$9,990,000; college programs - \$6,862,000; residences - \$4,195,000.

In addition to O and M funding, the Department of Education also received \$11,723,000 in capital funds.

#### *Construction Program*

Restoration of Breynat Hall, the male residence at Thebacha College, Fort Smith, was completed early in 1983 after severe fire and water damage. The new Norman Wells school was completed. The new Clyde River school is expected to be completed in March of 1984.

A grant to the separate school board in Yellowknife resulted in a four classroom addition to St. Joseph's School.

Projects to be tendered in 1983 include new schools in Fort Franklin, Hay River Reserve, Sanikiluaq and Snowdrift. Preliminary design work for new schools in Fort Liard, Snare Lake, Holman Island, Arctic Bay and Resolute Bay is underway.

Extra classroom units were constructed in Lake Harbour, Chesterfield Inlet, Baker Lake, Eskimo Point, Spence Bay and Coppermine.

The Samuel Hearne Secondary School was expended to accommodate the vocational certificate program. An automobiles shop was opened in 1982 and a carpentry shop in 1983. The general mechanics shop will be completed in 1984.

The upgrading of Akaitcho Hall student residence in Yellowknife and Grollier Hall senior student residence in Inuvik is continuing.

#### *Higher Education*

The trend in the enrolment of post-secondary program of studies has been on the rise since the new Student Financial Assistance Ordinance came into effect in July, 1982. School year 1982-83 saw enrolment increase by 25%. At the July 1983 meeting of the student grants and bursaires board, over 650 applications to post-secondary program of studies were appraised by the board. This represented an increase of 50% over the previous school year.

#### **Information**

##### *Minister's Introduction*

#### **Economic Function: General Government Services**

The Hon. Dennis Patterson was the first elected executive member to assume responsibility for the Department of Information in March of 1983. The department formerly reported to Commissioner John Parker.

One of the minister's first concerns was directed towards implementation of an active information program responsive to the communication needs of northern residents, regardless of language.

In addition, he gained the support of his colleagues for extension of the department's northern satellite communications program into all communities with a population less than 150 people. The program change allowed for establishment of television and radio services at Grise Fiord, Canada's most northerly community, and at Arctic Red River in the western Territories during 1983, with facilities scheduled for Jean Marie River and Nahanni Butte in 1984.

During the year, the department's newly-formed language bureau strengthened its foundation with the hiring of Athapaskan and Inuktitut linguists and a number of co-ordinating meetings were held with the Department of Education to ensure compatibility of programs and to guard against overlap.

Grant monies were provided to the Native Communications Society of the Northwest Territories for the purchase of new typesetting equipment with an Athapaskan language capability. A contract was arranged with the Roaring Rapids Friendship Centre in Fort Smith to assist in the production of native language video tape programs for use on the local cable television station and a joint publishing venture was struck with the Kitikmeot Inuit Association to produce an Inuinnaqtun training manual.

In addition, interpreting services were provided to the Inuit Circumpolar Conference in Frobisher Bay, various regional councils and the Nunavut Constitutional Forum.

## *Language Bureau*

The department's language bureau provides interpreting, translating and public information services to the departments and agencies of the Territorial Government in English and all native languages: Inuktitut, Chipewyan, Dogrib, Loucheux, South Slavey and North Slavey.

The bureau's interpreting and translation services are also available to native individuals or groups wishing to communicate with the government in their own languages.

The first few months of 1983 saw completion of a preliminary training program for the newly established Dene languages section. The six-month training program provided an entry point to the bureau's long-term, competency-based training program.

Following the initial training period, Dene interpreter-communicators conducted a survey on information needs and basic language skills in 18 Dene communities.

The Inuktitut section continued to provide interpreting/translating services to the Legislative Assembly, government departments and regional councils based in the Arctic areas, and provided a core group of interpreters for the Inuit Circumpolar Conference and for meetings of the Nunavut Constitutional Forum.

For the first time members of the Dene languages section provided simultaneous interpreting services to meetings of the Deh Cho Regional Council in South Slavey and the Dene National Assembly in Slavey, Dogrib and Chipewyan.

## *Northern Communications Program*

During 1983, the communities of Grise Fiord and Arctic Red River acquired satellite-delivered television and radio service through the department's northern communications program.

Since the communications program began in 1978, twenty-two communities with populations less than 500 have been provided with radio and television service. Communities with population over 500 are directly served by the CBC.

The Department of Information also continues to encourage the development of local radio stations which provide a valuable communication role in communities. The vast majority of programming on community radio stations is in native languages. Where the department has installed satellite equipment, local radio societies are given the opportunity to tie their own radio station into the available radio transmitter. This has occurred in 15 of the 22 communities served. An additional 15 communities either have local access to CBC installations or completely independent community radio outlets. The department's community radio grant program assists local radio stations with operating costs.

## *Public Affairs*

During the year, public affairs officers prepared over 300 releases and numerous public service announcements for radio and television, along with brochures, posters and pamphlets.

Administratively, the branch undertook a review of its Inuvik office and entered into an arrangement with the Native Women's Association of the Northwest Territories to provide a storefront information centre for the Mackenzie Delta region. The centre, managed by the association in Inuvik, will provide both government and association information for public distribution.

The audio-visual unit designed and established a video production system and a training schedule to teach Dene interpreter-communicators how to use the medium themselves to communicate in their own languages to Dene residents of the North.

Production of eight tapes is currently underway. Unit staff has completed a tape on the Athapaskan Language Centre and the use of Dene languages, and a second on the government's new resource development policy.

In 1984, the unit will implement a program to place audio-visual delivery systems in Dene communities.

## *Publications and Production*

Publication production reflected the increased pace of political evolution in the Northwest Territories and the expansion of ministerial government.

A report was produced and widely distributed on the First Ministers' Conference on Aboriginal Rights and the Constitution.

Several reports and brochures were produced in conjunction with the constitutional forums including "Nunavut: History of an Idea" and "Building Nunavut" for the Nunavut Constitutional Forum. A report was published on the Ninth Legislative Assembly of the Northwest Territories.

The Bird Report on the Taxation of Northern Allowances was published.

The department also co-ordinated the production of "Education Focus". A newsletter was published for the Minister of Energy, Mines and Resources to inform the public on matters related to resource development policy and the operations of the Energy, Mines and Resources Secretariat.

## *Social Services*

### *Economic Function: Welfare*

#### *Minister's Introduction*

During 1983, Minister of Social Services Kane Tologanak worked to improve delivery of social services. Emphasis was placed on the need for participation of communities in the entire spectrum of services. Priority was placed on developing northerners' capacity for self-help, through education and community support services.

The department aims to keep people, as much as possible, within their own familiar environment through the provision of services within the community and to implement preventive, rather than remedial programs.

A marked increase of suicides was noted. In order to combat this trend the department, working closely with Health and Welfare Canada, undertook the provision of community education and training, as well as ongoing support services.

The trend towards increasing community responsibility saw further delegation of responsibility for social services to local levels, encouragement of community committees and continuing dialogue with those communities working towards devolution.

Concern for the aged and the handicapped citizens was shown by planning for and establishing of appropriate facilities. An acceptable legislative base for the establishment of adequate protective services for aged and handicapped citizens was subject.

Staff training personnel continued to foster greater awareness in departmental staff through cross-cultural training and upgrading workshops in child welfare, alcohol and drug problems, corrections services, as well as counselling skills and delivery of statutory services. Several graduates from community college programs and universities returned to the North and resumed their activities as community social service workers.

In addition to its support role to program divisions, the policy and planning section played a major part in the review and assessment of resource development activities in the North.

The department's primary focus will continue to be the maintenance of cultural values, along with the fostering of an attitude of self-help in northern families and communities and the maintenance of a healthy, adaptive life style.

#### *Aged and Handicapped*

The year was marked by increased emphasis on providing services to elderly people.

The provision of home support programs by local groups in communities was stressed. Work commenced on the development of a senior citizen's facility in Rae Edzo (in conjunction with the Housing Corporation). A home for the elderly was opened in Yellowknife.

The Frobisher Bay foster home for profoundly handicapped children was moved into the town. In cooperation with the Department of Education a special class for handicapped children was started in Nakasuk School.

A comprehensive program for visually impaired people in Rae Edzo was undertaken, with the Canadian National Institute for the Blind working in close conjunction with community groups.

The department cooperated with other health and social services agencies to sponsor a major conference on hearing impairment in Frobisher Bay.

#### *Alcohol and Drug Program*

The Department of Social Services placed a high priority on the treatment, rehabilitation and prevention aspects of alcohol and drug abuse. This was co-ordinated by the staff of the alcohol and drug program, working closely with the alcohol and drug coordinating council.

Programs funded by the government ranged from residential treatment programs at Delta House and Northern Addiction Services, and to related community programs.

A significant drop in the age of those seeking assistance for drug and alcohol problems was noted.

In keeping with Executive Council direction, training continued as a priority. In 1983, two major training events took place. The first was the delivery of a 10 day training set on core knowledge to five regions of the N.W.T. The second was the establishment of an agreement between the Territorial Government and Health and Welfare Canada to develop a two year training program for all addiction workers in the N.W.T.

The department continued to emphasize the role of community groups in the delivery of services to the addicted person.

#### *Financial Assistance Services*

Social Services led in the establishment of an inter-departmental "economic options" committee to review the extent of social assistance and government grants relating to the income of hunters and trappers and the able-bodied unemployed.

Financial assistance expenditures increased by 17% to \$8,742,000 of which 18% went to disabled or sick individuals and 17% to single parents with young children. Eleven hundred senior citizens received the monthly senior citizens benefit of \$75.

#### *Corrections*

Overcrowding in corrections facilities and a high rate of imprisonment continued to be a concern in 1983. The fine options program should help to eliminate some of the overcrowding. The construction of a 24-man trailer unit at the Yellowknife Correctional Centre took some pressure off the main institution.

Community work programs doubled, with inmates working on small projects such as cleaning golf courses, fence construction, clearing of sidewalks, cutting firewood and power poles along the Mackenzie Highway, area cleanups, fishing programs and building of coffins at Baffin Correctional Centre.

The northern correctional officer trainee program has been developing successfully. Thirty-four percent of the first level correctional officers at Yellowknife Correctional Centre and South Mackenzie Correctional Centre are long-term northerners.

#### *Family and Children's Services*

Training of child care workers and modification of facilities resulted in significant improvement in services. Reorganization of treatment facilities led to the development of Northern Lights in Inuvik, providing group home treatment and family crisis services, and Trail-cross and River Ridge in Fort Smith, providing assessment and treatment services for adolescents. Greater emphasis was placed on providing services to troubled families so that children can more frequently be maintained in their own homes and the family unit retained.

With proclamation of the Young Offenders Act scheduled for April 1984, planning for the implementation of this legislation was a major task in 1983.

The summer camp program was enhanced, and it proving highly successful in preventing young people from coming into conflict with the law during their vacation period. The program is also to be extended into the winter season.

## Health

### Economic Function: Health

#### *Minister's Introduction*

Under the direction of the Honourable Kane Tologanak, Minister of Health, the department was involved in several new activities during 1983. These included:

- The Medical Professions Ordinance, passed in the February session of the Legislature, brought into line the rules governing the granting of licenses and permits to practice medicine in the N.W.T.
- The Medical Care Ordinance was amended to strengthen the audit and collection procedures of the act with respect to physician billings.
- The Territorial Hospital Insurance Services Ordinance, the Public Health Ordinance and the Mental Health Ordinance are under revision.
- A cooperative study with the health protection branch of Health and Welfare Canada into smoking habits and tobacco use among N.W.T. students was begun.
- Program responsibility for chronic and extended care and nursing home care was transferred from the Department of Social Services to the Department of Health. Community assessments were begun to devise long-range strategies for the health care of the elderly.
- Health services to the community of Tungsten will now be provided by the Government of the N.W.T. through an arrangement with Health and Welfare Canada.

#### *Health Information and Promotion*

Under the direction of the Department of Information, the health information and promotion section began production of a series of radio and television spots which will provide information on both traditional and modern health care.

The Rae-Edzo Health Committee is in its fourth year of funding. Well-baby and prenatal classes in the community are now better attended, and there is an improvement in compliance with T.B. chemoprophylaxis.

A summary of the smoking level report is being translated into Inuktitut for use in the N.W.T., and copies in both English and French are available from the health resource centre.

Under the school health program, funded in 1983 by Health and Welfare Canada, the development of a school health curriculum guide was begun. A program coordinator and a researcher/writer were hired in August 1983 and a community health education committee and a professional advisory committee were formed.

#### *Northern Rural Health Program*

The Territorial Government continues to administer a contract with Health and Welfare Canada for the provision of physicians. Thirteen physicians are employed in various N.W.T. communities.

#### *Training*

The Department of Health continued to fund training for persons pursuing careers in health services. Six students were awarded bursaries in 1983.

The program helps to alleviate health manpower shortages in the North and encourages health workers to obtain additional skills.

#### *Insured Services*

The no premium health care plan provides medical care and hospital insurance to eligible N.W.T. residents.

The department administered a broad range of insured services including medical care, hospital care, pharmacare, medical travel and other supplementary benefits. The hospital insurance benefit covers detoxification services provided by an approved provincial or territorial centre.

#### *Fort Smith Health Centre*

The Fort Smith Health Centre is a modern, accredited health care facility operated through a local board of management providing in-patient care (15 beds), extended/chronic care (10 beds), out-patient and emergency services, home care, physiotherapy, public health, social services and doctors' offices for visiting specialists.

Specialists and consultant services are provided on a regular basis by the Stanton Yellowknife Hospital.

#### *H.H. Williams Memorial Hospital*

H.H. Williams Memorial Hospital, a modern accredited health centre operated for the government by the Pentecostal Assemblies of Canada, serves residents from the southern Great Slave area, particularly the communities of Hay River, Pine Point, Fort Resolution, Enterprise and Fort Providence.

The facility provides in-patient and emergency services, home care, public and environmental health, social services and offices for visiting medical specialists.

Specialist and consultant services are available on a regular basis from Stanton Yellowknife Hospital. Physician services are provided through the Hay River Medical Clinic.

#### *Stanton Yellowknife Hospital*

Stanton Yellowknife Hospital, a modern accredited 72 bed acute care hospital, is operated through a board of management and provides a wide variety of in-patient services.

The hospital has on staff medical specialists in the areas of orthopedics, otorhinolaryngology (ENT), obstetrics/gynecology, ophthalmology, internal medicine, and psychiatry. Through a contract with the federal medical services branch, these specialists regularly visit major communities in the Western Arctic.

The hospital provides occupational therapy, physiotherapy, audiology and speech therapy programs.

A psychiatric program serves Yellowknife and major centres in the Fort Smith and Kitikmeot regions.

Planning is under way for construction of a new facility in Yellowknife.

### Baffin Regional Hospital

The Baffin Regional Hospital, a 35 bed accredited hospital services the health needs of all Baffin region communities.

Specialists and consultant services are provided on a regular basis through a contract arrangement with McGill University of Montreal and from the Stanton Yellowknife Hospital

### Detoxication

The Yellowknife Detoxication Unit, administered by the Northern Addiction Services, serves residents of the Western Arctic.

### Medical Care Plan

The Medical Care Plan provides payment for insured services at 100% of the approved fee schedule of the province/territory within Canada in which the service was rendered. All persons registered under the N.W.T. Health Care Plan are eligible for benefits under Medicare.

The plan covers all medically required services rendered by physicians in the office, clinic, hospital and home, as well as certain surgical-dental procedures medically required to be performed in a hospital. Surgical procedures, anaesthetic services and complete maternity care are also provided.

### Territorial Hospital Insurance Services

The N.W.T. Hospital Insurance Plan is administered under the direction of the Territorial Hospital Insurance Services Board.

The Plan provides coverage for a broad range of patient and out-patient services.

The Frobisher Bay Hospital and its funding was transferred to Government of the N.W.T.

During the fiscal year, the program responsibility and funding for extended and chronic care was transferred from the Department of Social Services.

### Medical Care Expenditures

	1982/83		1981/82	
	\$	%	\$	%
N.W.T. Doctors	5,388,000	74.2	4,010,000	78.2
Out of Territories				
Doctors				
Alberta	1,078,000	14.8	640,000	12.5
Manitoba	285,000	3.9	177,000	3.4
British Columbia	116,000	1.6	67,000	1.3
Quebec	108,000	1.5	69,000	1.3
Ontario	196,000	2.7	112,000	2.2
Saskatchewan	26,000	0.4	19,000	0.4
Yukon	25,000	0.3	12,000	0.5
Other	44,000	0.6	24,000	0.5
Subtotal				
Out of Territories Doctors	1,878,000	25.8	1,120,000	21.8
Total Payments	7,266,000	100.0	5,130,000	100.0

### T.H.I.S. Expenditures

	1982/83		1981/82	
	\$	%	\$	%
N.W.T. Hospitals				
Federal Hospital	5,180,000	16.4	3,907,000	18.8
Budget Review				
Hospitals	13,093,000	41.6	10,458,000	50.5
Reciprocal Billings				
(In-patients)	318,000	1.0		
Subtotal				
N.W.T. Hospital	18,591,000	59.0	14,365,000	69.3

	1982/83		1981/82	
	\$	%	\$	%
Out of Territories				
Hospital Payments				
Yukon	31,000	0.1	30,000	0.1
British Columbia	196,000	0.6	126,000	0.6
Alberta	5,409,000	17.2	2,923,000	14.0
Saskatchewan	37,000	0.1	32,000	0.2
Manitoba	3,053,000	9.7	2,062,000	9.9
Ontario	518,000	1.7	308,000	1.5
Quebec	2,151,000	6.8	856,000	4.1
Maritimes	51,000	0.2	35,000	0.2
Foreign	346,000	1.1	5,000	0.1
Subtotal	11,792,000	37.5	6,377,000	30.7
Extended and Chronic Care	1,115,000	3.5	—	—
Total Payments	31,498,000	100.0	20,742,000	100.0

### Uninsured Services

Certain non-insured services which are beyond the scope of the N.W.T. Health Care Plan are covered by extended medical benefits, pharmacare and medical transportation programs.

Extended medical benefits provide financial assistance to "other" status residents with certain long-term disease conditions. Pharmacare provides for payment of approved prescription drugs listed in the N.W.T. pharmacare formulary for senior citizens and "other" status residents who are eligible under the extended medical benefits. Similar non-insured services are provided to Treaty Indian/Inuit residents by medical services, Health and Welfare Canada, who establish the terms and conditions under which their programs are administered.

A policy on medical transportation, approved by Executive Council, describes the categories of patients eligible for benefits under Department of Health programs.

The Department of Health jointly funds with the Department of Social Services, co-ordinated home care programs in Yellowknife, Hay River and Fort Smith. These services are provided by federal nurses in the smaller settlements.

### Federal Health Services

The Federal and Territorial Governments cooperate in the promotion and maintenance of a healthy environment and the provision of both public health and treatment services. The Department of National Health and Welfare through its Medical Services Branch assists the Territorial Government in the administration of health ordinances and operates health facilities in the Territories.

### Causes of Death During 1982

Cause of Death	Number of Deaths	% of Total Deaths
Infectious and Parasitic Disease	4	1.7
Neoplasms	42	18.2
Endocrine, Nutritional and Metabolic Diseases	1	0.4
Mental Disorders	8	3.5
Nervous System and Sense Organs	2	0.9
Disease of the Circulatory System	48	20.9
Disease of the Respiratory System	17	7.4
Disease of the Digestive System	2	0.9
Disease of the Genitourinary System	3	1.3
Congenital Anomalies	5	2.2
Conditions Originating in Prenatal Period	6	2.6
Symptoms, Signs and Ill-defined Conditions	21	9.1
Injury and Poisoning	71	30.9
Total	230	100.0

### Health Statistics

In 1982, community health nurses in the field saw 81,145 patients and performed 184,987 services throughout the Northwest Territories.

The birthrate for 1982 was 27.1 per thousand (1000) population. No maternal deaths was recorded.

There were 230 recorded deaths in the Northwest Territories. This gives an overall crude death rate (i.e. total deaths per 1000 population) of 4.9.

The infant mortality rate (death under one year of age per 1000 live births) was 15.7. This rate is lower than previous years.

Accidents, injury and violence caused the highest percentage of death with motor vehicle, drowning, fire, firearms, overdoses, suicides, exposure, stabbing, and industrial accidents the leaders of the group, in that order. Tuberculosis incidence is 72.4 per 1,000,000 population. A total of 34 cases of new, active and reactivated cases of tuberculosis were detected in 1982 out of a mid-year population of 47,053.

### Local Government

### Economic Function: Local Government

#### Minister's Introduction

1983 was James Wah-Shee's fourth year as the Minister of Local Government. During the year, the minister travelled extensively throughout the Northwest Territories and the rest of Canada in connection with such diverse responsibilities as the community airports program, sport, recreation, culture and municipal affairs.

The importance of culture in the North was recognized by Mr. Wah-Shee's appointment as Minister of Culture, and the appointment of Rene Lamothe to prepare a report for the Executive Council. As a result of the report, a senior advisor on culture was appointed to further develop a policy on culture for the Executive Council and to support the work of the Dene and Inuit Councils of Elders. The possibility of eventually bringing together in one ministry, responsibility for all Territorial Government programs in support of heritage and culture, is being examined.

The Regional and Tribal Councils Ordinance was assented to by the Ninth Assembly. The Ordinance provides for five councils to be incorporated immediately: the Baffin Regional Council (which had previously existed under its own ordinance passed in 1980), the Keewatin Regional Council, the Kitikmeot Regional Council, the Deh-Cho Regional Council and the Dogrib Tribal Council. Other councils are forming in Great Bear and South Great Slave areas which may also be incorporated under this ordinance.

A discussion paper "Design for Devolution" which set out ideas for a comprehensive local government ordinance was published. The proposed ordinance is intended to replace the Municipal Ordinance.

In developing a new Local Government Ordinance, the minister consulted widely with representatives from all levels of communities and with the Dene Nation. Some of the major issues included the relationship of community governments and band councils; involvement of community and municipal councils in economic development activities; reforms in municipal financing and taxation; increased authority for municipal councils in land use planning and zoning; and improved representation for aboriginal residents in urban municipalities.

The minister introduced changes to the land pricing policy in 1983 in response to complaints that moves towards home ownership were being thwarted by the high price of developed lots. The Territorial Government now has a policy which ensures that land outside the tax-based municipalities will be available to individuals at a reasonable price. Further assistance to private homeowners came in the form of an increase in the annual homeowner's tax rebate from \$300 to \$400.

In 1983 the first recreation facilities were constructed under a new policy sponsored by the minister. Community halls were completed at Cape Dorset and Fort Resolution during the year, and projects to provide community or multi-purpose halls were approved or are underway in 20 communities. Annual capital expenditures on recreation facilities are running at \$3.5 to \$4 million. The new policy also provided for assistance in the cost of operating and maintaining recreation facilities; 1.4 million dollars were distributed to communities under this program in 1983.

### *Direction and Objectives*

The trend in the Department of Local Government in 1983 was towards a less centralized organization - regions self-sufficient in personnel and funds, and better able to respond to the needs of local governments. This was particularly true in the areas of community planning and capital programming. Managerial responsibility for these functions now rests with regional superintendents.

Considerable effort went into assisting regional and tribal councils in 1983. The five already incorporated, and others now forming, will be an important source of advice and direction for regional staffs.

The objective of the department is to provide service and support to communities. Transfer payments to local governments in the form of grants, contributions and subsidies make up about two thirds of the \$33.5 million appropriated to the department for 1983/84 operations and maintenance purposes. As well, more than \$3 million additionally will be spent delivering municipal services directly and providing community-based administrative support to unincorporated settlements. Financial assistance totalling over \$500,000 was provided to assist the five incorporated regional and tribal councils.

Regions participated more than ever before in planning and implementing the department's capital programs. More than three quarters of the \$22 million capital appropriation for 1983/84 is being administered through regional offices. This less central approach to project management will strengthen the department's capability to respond to the many factors which can affect capital infrastructure development.

The department concluded negotiations with the federal government and agreed to a property assessment value for national parks and D.E.W. line sites. A total of \$4.7 million (including retroactive payments to 1980) will be added to the department's 1983/83 property tax revenue estimate of \$2.3 million. Future years will see tax revenue increased by \$1.7 million as a result of this agreement.

### *Community Planning and Development*

With the decentralization of activities to regional offices, the division was appropriately reorganized. Following the consolidation of almost all departmental capital into this division, regional capital budgets and some planning and engineering positions were transferred to the regions.

Major community planning activities took place in several communities.

Water and sanitation construction projects were carried out in Fort Smith, Frobisher Bay, Pine Point and Yellowknife, with financial contributions from the department.

### *Land and Assessment*

A sole vendor agreement for the administration and management of Commissioner's Land within municipalities was signed with the town of Fort Smith. Agreements are being negotiated with the towns of Hay River, Inuvik and Frobisher Bay.

The division sponsored a ten day training course for municipal and governmental land administrators.

The communities of Coppermine, Fort Franklin, Fort Norman, Paulatuk and Arctic Red River were added to the 1983 assessment roll under the Taxation Ordinance for the 1984 taxation year. General re-assessment for the city of Yellowknife and village of Fort Simpson were completed under the Municipal Ordinance for the 1984 taxation year.

The artificial islands in the Mackenzie River adjacent to the hamlet of Norman Wells, as well as additions to the existing refinery, were added to the 1983 assessment roll.

### *Municipal Affairs*

A municipal administration training program, which by arrangement with McMaster University, includes certification, took place. In addition, an advanced seminar in municipal management was held with over 20 participants. To date there have been 53 graduates at the introductory level, 40 at the intermediate level and 32 at the university level.

Fluctuating demands for developed building lots in municipalities necessitated some re-structuring of municipal debenture debts relative to land development. A late spring coupled with financial restraints had the effect of retarding building construction, but in the latter part of the year a resurgence was evident and housing starts were almost back to normal.

### *Community Airports*

The joint territorial/federal community airports program continued to provide improved airports and aviation support services at N.W.T. communities.

### *Sport and Recreation*

The sport and recreation division was fully decentralized in 1983. There are now recreation officers in every region.

A major conference was held in Yellowknife in October. Delegates from sport, recreation and traditional games gathered to discuss the future direction of sport and recreation.

For the first time traditional games were held in all regions. Northern Games were held in Inuvik, Gjoa Haven, Pangnirtung and Coral Harbour, and Dene Games were held in Fort Resolution. A cultural contingent also participated at the World University Games in Edmonton in July.

Fifty-one communities participated in the Terry Fox Run and raised over \$50,000 for cancer research.

## **Aboriginal Rights and Constitutional Development**

### **Economic Function: General Government Services**

#### *Minister's Introduction*

James Wah-Shee, as minister for Aboriginal Rights and Constitutional Development, provided direction and made significant progress in the portfolio during 1983. Native claims negotiations between the Territorial Government, Native groups and the federal government continued satisfactorily; an historic Conference on Aboriginal Rights and Constitutional Matters was held, and a second conference convened.

Dennis Patterson continued to serve as associate minister for Aboriginal Rights and Constitutional Development with primary responsibilities for eastern Arctic constitutional development and aboriginal claims.

In 1983, James Wah-Shee continued as chairman of the Constitutional Alliance and the Western Constitutional Forum (WCF). Dennis Patterson served as chairman of the Nunavut Constitutional Forum (NCF). The alliance and forums have as their membership elected representatives from the major aboriginal organizations and from the Legislative Assembly. The separate forums for the east and west were created by the umbrella organization, the Constitutional Alliance, following the 1982 territorial-wide plebiscite in which residents voted in favour of dividing the Northwest Territories.

The Constitutional Alliance sought consensus, through public participation, on a boundary between the east and west. The development and acceptance by N.W.T. residents of separate constitutions for the two new political jurisdictions became the mandate of the forums.

Both forums became incorporated as societies and in September 1983 signed financial constitutional agreements with the Government of Canada.

The forums continued to meet independently and jointly as the Constitutional Alliance. The NCF published a booklet entitled, 'Building Nunavut' outlining a preliminary set of Nunavut constitutional principles, visited Inuit communities and held public consultation meetings for input and review of the elements of a Nunavut constitution.

The WCF co-sponsored a series of research projects with the Legislative Assembly's special committee on constitutional development, produced and distributed a series of information packages to Mackenzie Valley communities and began a process of public consultation for input and feedback.

The Committee for Original Peoples' Entitlement (COPE) claim is nearing completion and a final agreement is expected to be reached once the jurisdictional overlap question is resolved.

The Tungavik Federation of Nunavut (TFN) claim also progressed. A number of provisions were initialled including national parks, territorial parks, archaeology, outpost camps, conservation areas, municipal lands and two documents outlining the purpose of Inuit land title and principles to guide the identification of areas of Inuit land title.

The Dene/Metis claim also saw more progress than the previous years. New leaders were elected to both aboriginal associations and a joint claim secretariat created.

#### *Aboriginal Rights and Constitutional Development Secretariat*

The Aboriginal Rights and Constitutional Development Secretariat continued to provide advice and support to the minister and associate minister, and managed and coordinated the Territorial Government's input in two interrelated processes - aboriginal claims and constitutional development.

The secretariat was actively involved, in organizing conferences and meetings which resulted in the formation of the Constitutional Alliance and the two constitutional forums (NCF and WCF).

The NCF has a draft proposal for a Nunavut constitution and public consultation began in 1983. Ratification is anticipated in 1984. The WCF carried out the first round of the public consultation phase in the fall of 1983 and will continue the consultations through the winter of 1984.

The secretariat also participated in the planning and preparatory work for the First Ministers' Conference on Aboriginal Rights and Constitutional Matters.

## Northwest Territories Housing Corporation

### Economic Function: Welfare

#### *Minister's Introduction*

As minister responsible for the Northwest Territories Housing Corporation, Arnold McCallum emphasized two major objectives in 1983. The first was development of homeownership incentives that encouraged greater numbers of people to own their own homes. To achieve this objective, and following direction from the Legislative Assembly, Mr. McCallum approved an increase in the forgivable loan offered under the homeownership assistance program to \$30,000 and endorsed a plan that made it more attractive to people living above the treeline. As well, the minister lobbied his federal counterparts to ensure adequate labour funding would be made available under the Canada Community Development Program (CCDP) and New Employment Expansion and Development (NEED) programs. Over 80% of all homeownership clients received labour funding support.

A high level of interest was generated throughout the Territories in support of all homeownership programs including the homeownership assistance program, the rural and remote program and the northern territorial rental purchase program. A senior citizens home repair program was approved, and \$100,000 in base funding was committed. The program is designed to assist senior citizens on fixed incomes to undertake home repairs. The program went into effect October 3, 1983.

The second major objective set by the minister was the development of safeguards to ensure northerners and northern businesses benefit from construction activity. In addressing this concern, all construction contracts were adjusted and clauses emphasizing the need to utilize local labour were inserted. The Department of Economic Development and Tourism developed labour profiles of communities where construction activity was to take place and worked closely with the contractors and the corporation to ensure available semi- and unskilled labour at the community level was utilized.

In 1983 northern contractors were successful in competing in the construction field. In the corporation's major capital programs, excluding homeownership, contracts totalling \$16,151,000 were let to northern construction contractors. This represented 94% of all money spent in capital construction. The corporation's business stayed in the North, representing an increase of 66% over 1981/82.

The board of directors of the housing corporation worked closely with Mr. McCallum in 1983. Board members are appointed by the Legislative Assembly from every part of the North, to use their collective knowledge in the development of housing policies. Because of their close working relationship with the minister, board members received the direction required to carry out the wishes of the Legislative Assembly.

The Northwest Territories Housing Corporation is responsible for the development, direction and co-ordination of social housing programs to ensure that an adequate standard of housing is available to residents of the Northwest Territories.

#### *Finance and Administration*

The capital budget for the housing corporation in 1983 totalled \$33,325,000 with 6% funded by Canada Mortgage and Housing Corporation (CMHC) and 33% by the Government of the Northwest Territories.

The 1983 operations and maintenance budget for the corporation totalled \$48,673,000 funded 30% from CMHC and 61.6% from the Government of the Northwest Territories. Rent collection and other non-cash items contributed 8.4%

#### *Programs and Activities*

Programs of the Northwest Territories Housing Corporation are delivered by 41 staff members in six district offices, located in Frobisher Bay, Rankin Inlet, Cambridge Bay, Inuvik, Hay River and Yellowknife. District staff are responsible for monitoring and assisting 45 housing associations and authorities, which carry out property management functions for approximately 4000 rental units.

The corporation's program satisfy two basic housing needs. The homeownership assistance program and rural and remote mortgage assistance program are offered for individuals capable of operating and maintaining their own home. For families who cannot afford the costs of owning and operating their own home, or in areas where homeownership is not an option, the corporation rents housing units.

Allocation of units in a community is based on needs surveys and is also the responsibility of the housing association or authority, within guidelines established by the corporation.

The homeownership assistance program assists approved clients to build their own home. Clients must have the initiative and resources to build the unit and the ability to assume all operating costs when the unit is completed. Assistance is provided in the form of a material package worth up to \$30,000. The cost of freight to the community and the cost of a gravel pad, in accordance with the house specifications, is provided where required in addition to the material package. The client must provide all tools, labour and materials, not provided in the material package. In cases where the client can obtain private financing, the level of material assistance is reduced accordingly. Material packages were approved for 73 clients in 1983. Clients were responsible for securing their own labour funds through incentive programs offered by the federal government.

The rural and remote housing program, offered by the housing corporation in partnership with CMHC, assists clients by subsidizing mortgage payments to 25% of adjusted family income. Ten clients were approved under this program, with an average unit price of \$80,000. An additional three units were to be funded in 1983, with construction scheduled for 1984.

The northern territorial rental purchase program is a rent to purchase plan, whereby a portion of the rent paid is applied to the purchase price of the unit.

The second phase of the corporation's two year construction cycle for public housing saw 84 new rental units being built in 12 communities.

Rehabilitation of the existing housing stock was emphasized, and 150 northern rental units were upgraded to meet health and safety standards. The roof retrofit program was continued with the repair of 151 units. Both programs will be extended into future years.

For public housing units that do not qualify for major rehabilitation, but require upgrading beyond the capacity of routine or preventative maintenance, the corporation offered the extra-ordinary maintenance program. This funding can be used to replace major household equipment correct health and safety code violations, or upgrade the energy efficiency of a unit.

The enriched emergency repair program is used to provide some upgrading to northern rental units; to extend the life expectancy of the unit until complete repairs can be done. Funding is provided to a maximum of \$7,600 per unit under a cost-sharing agreement with CMHC. During 1983, \$395,200 was spent on 42 units in the Hay River, Yellowknife and Inuvik districts.

The district offices provide training and support to housing associations and authorities. The Corporation also provides formal workshops for both district staff and housing association and authority personnel.

#### *Board of Directors*

Through changes to the Northwest Territories Housing Corporation Ordinance, the Legislative Assembly increased the board of directors to 12 appointed members. In 1983, the board held meetings in Frobisher Bay, Fort Smith, and Yellowknife.

### **Workers' Compensation Board**

#### **Economic Function: General Government Services**

The Workers' Compensation Board was established under, and is responsible for, the administration of the Workers' Compensation Ordinance, 1977.

Assessments are levied on all employers in the Northwest Territories on all basis of a percentage of their payrolls, to meet all claims payable during the year, including costs of administration. The assessments year, including costs of administration. The assessments are also used to provide for payment of liabilities in respect of future compensation of accidents which have occurred or may occur, and to establish reserves, thereby preventing employers in the future from being unduly or unfairly burdened with such costs.

In 1983, benefits to workers were based on a year's maximum assessable remuneration (YMAR) of \$23,200.

Approximately 2,650 accident claims were made. Lost time claims accounted for 40 per cent of this total.

The board raised the pensions of all existing pensioners to 1982 levels of payments on the YMAR of \$23,200. Payments to widows were raised to \$638 per month and payments to dependent children raised to \$145 per month.

There was an increase in employers registered with the Workers' Compensation Board.

Merit rebate payments were again issued to qualifying employers operating in the Northwest Territories. These payments were made in 1983 based on the employers record for 1982. Over the past four years the board has paid back to employers nearly \$3.5 million under its existing safety incentive program.

The safety incentive program was expanded program will continue to see employers with good safety records receive dividends, while employers with a high incidence of accidents will be levied additional assessments.

The board continued to assist St. John Ambulance to provide first-aid training for workers. Funding of \$40,000 was made available to offer accident prevention and treatment instruction to workers.

### **Courts and Judiciary**

#### **Economic Function: General Government Services**

##### *The Courts*

Organized and administered on a pattern-closely similar to that of courts elsewhere in Canada, the courts of the Northwest Territories are linked to and form an integral part of the nation's judicial network.

Avenues of appeal exist through the court system of the Northwest Territories to the Court of Appeal and from there to the Supreme Court of Canada. There are also avenues of review from the lower courts (and from various boards and agencies of the Northwest Territories) to the Supreme Court of the Northwest Territories, ensuring that these bodies exercise their powers within the limits described by law.

##### *The Supreme Court of Canada*

Being the final appeal court of Canada, the Supreme Court of Canada is a court of record and consists of nine judges presided over by the Chief Justice of Canada. In addition to their judicial duties, the Chief Justice or a designated Judge of the Court acts as the Administrator of Canada in the absence or unavailability of the Governor General. The Court sits only at Ottawa. Its decisions bind all lower courts.

##### *The Court of Appeal*

The highest appeal court of the Northwest Territories, the Court of Appeal is a court of record.

The court hears civil and criminal appeals from the Supreme Court and certain criminal appeals from the Territorial Court. Sitting at least once a year at Yellowknife and at other times elsewhere in the Territories or at Edmonton or Calgary, decisions bind all lower courts.

### *The Supreme Court of the Northwest Territories*

The superior court of general jurisdiction for the Northwest Territories, the Supreme Court of the Northwest Territories is a court of record and has two resident judges, and a number of deputy judges who are all federally appointed judges of courts in the provinces.

The court holds trials in civil and criminal matters, sitting both with and without a jury. It also hears certain appeals and exercises powers of review in cases arising in the Territorial Court, the Juvenile Court, the coroner's courts, and before justices of the peace, as well as before various boards and agencies of the Northwest Territories. The Supreme Court sits at points throughout the Territories. Its decisions bind all lower courts.

### *The Territorial Court*

A court of record for the Northwest Territories, the Territorial Court has four resident judges and a number of non-resident deputy judges. The court holds trials without a jury in criminal cases and in certain civil cases involving less than \$5,000, and holds preliminary inquiries in criminal cases to be tried in the Supreme Court. The court sits at points throughout the Territories.

### *The Juvenile Court*

Eight Juvenile Court judges, including the four Territorial Court judges, sit at various points in the Northwest Territories, as required under the Juvenile Delinquents Act.

### *The Citizenship Court*

The Citizenship Court, consisting of judges of the Supreme Court and Territorial Court, sits at various points throughout the Northwest Territories, as required under the Canadian Citizenship Act.

### *The Coroners Courts*

Ninety-five coroners hold inquests as required throughout the Northwest Territories.

### *Justices of the Peace*

One hundred and twelve justices of the peace, sitting in their communities, hear matters under the criminal code and the ordinances of the Northwest Territories.

### *Court Officers*

The Registrars of the Supreme Court of Canada and of the Court of Appeal, and the clerks of the Supreme Court of the Northwest Territories and of the Territorial Court, have functions which include the organization, direction and supervision of the registries of their respective courts, each of which operates quite separately from the other. They make all arrangements, under the supervision and direction of the judiciary, for the hearing of appeals, trials and other matters as required. They "tax" (or adjudicate upon) costs awarded by their respective courts, as between the parties to lawsuits.

The clerk of the Supreme Court also "taxes" disputed bills of costs that have been submitted by solicitors to their clients. Appeals from such taxations are heard, firstly by a judge of the Supreme Court and then, if appealed further, by the Court of Appeal.

The Sheriff of the Northwest Territories executes civil judgments and orders of all courts of record of the Northwest Territories, and may be required to make arrests of persons and of ships, in addition to making seizures of other property. The sheriff is responsible for the security and order of court premises, and for the summoning of jurors in the Supreme Court of the Northwest Territories. Where necessary, the sheriff is assisted by members of the Royal Canadian Mounted Police, in their capacity as peace officers.

### *The Legal Profession*

The members of the legal profession are subject to the discipline of the Law Society of the Northwest Territories under the Legal Profession Ordinance and as otherwise required by law.

The judges of the superior courts (the Supreme Court of Canada, the Court of Appeal and the Supreme Court of the Northwest Territories) are appointed from among barristers and solicitors of at least 10 years standing. Judges of the Territorial Court are appointed from among barristers and solicitors of at least three years standing.

Fifty-four barristers and solicitors resident in the Territories, are on the rolls of the Law Society of the Northwest Territories. In addition 136 non-resident members of the Bar are entitled to provide legal services in the Northwest Territories.

### *Native Courtworkers and Maliiganik Tukisiiniakvik*

The Native Courtworkers Association and Maliiganik Tukisiiniakvik are corporate societies each of which is independent from but funded by government through the Legal Services Board. The Native Courtworkers Association has 10 courtworkers, located in the western and central part of the N.W.T. Maliiganik Tukisiiniakvik has a fully qualified lawyer and six courtworkers serving the Baffin area.

The courtworkers provide information and assistance in court matters to clients appearing before the Territorial Court, the Juvenile Court and the justices of the peace. They also assist legal counsel to prepare for court by providing a communication link with the clients. Although they do not provide legal advice, not being qualified as lawyers, they are specially trained and are knowledgeable in certain legal procedures, and can assist clients to initiate changes of name applications, child adoption applications and certain preliminaries in divorce cases.

The courtworkers also act as a referral agency, assisting clients to contact appropriate officials or agencies for further assistance, including legal aid. They distribute pamphlets with useful information on the legal rights of the individual and on other matters of concern to their clients.

### *Legislative Assembly*

Activities of the Assembly during 1983 will not be reported here. Interested readers are referred to the Government of the Northwest Territories 1983 Annual Report which describes in detail the Assembly Sessions.

Yukon Territory



## **Executive Council**

### **Economic Function: General Government Services**

The Executive Council was expanded to six members in 1983, and is comprised of the following members with portfolio responsibilities as shown:

*P.C. - Whitehorse Riverdale N*

Hon. Chris Pearson,  
Government Leader,  
Minister of:

Executive Council Office,  
Finance,  
Public Service Commission.

*P.C. - Whitehorse Porter Creek*

Hon. Dan Lang,  
Minister of:

Municipal & Community Affairs,  
Economic Development.

*P.C. - Tatchum*

Hon. Howard Tracey,  
Minister of:

Renewable Resources,  
Highways & Transportation  
Consumer & Corporate Affairs.

*P.C. - Whitehorse Riverdale S*

Hon. Bea Firth

Minister of:

Education, Advanced Education  
and Manpower,  
Tourism, Recreation & Culture.

*P.C. - Klondike*

Hon. Clarke Ashley,

Minister of:

Yukon Liquor Corporation,  
Yukon Housing Corporation,  
Workers' Compensation Board.

*P.C. - Whitehorse Porter Creek*

Hon. Andy Phillipsen,

Minister of:

Health & Human Resources,  
Government Services.

## **The Legislative Assembly**

The Legislative Assembly sat three times during the fiscal year.

Major pieces of legislation introduced, included a new Children's Act, Employment Standards Act, Legal Profession Act, Financial Administration Act, Access to Information Act, and a new Recreation Act.

A Legal Aid Agreement, an Economic Development Agreement and a Young Offenders Agreement were entered into or renewed with the Federal Government.

### **Executive Council Office**

The Executive Council Office was expanded to include responsibility for Intergovernmental Relations and the Land Claims Secretariat, in addition to Public Affairs and Internal Audit. Administrative support was also provided to the Federal Relations Office in Ottawa.

The Office provides a wide range of service to the Executive Council, including the function of Secretary to Cabinet and to the various Cabinet Committees. The department reviews and analyses all Cabinet submissions and intergovernmental agreements, and coordinates all policies and activities of the Government of Yukon with those of federal and provincial governments.

All protocol activities are coordinated and administrative support is provided to the Commissioner of Yukon and the Commissioner's Awards Committee.

The flow of Cabinet documents and submissions will be streamlined through increased use of word processing equipment and improved liaison with departments. Program and policy review and analysis will be carried out in conjunction with the Priority, Policy and Planning Secretariat in observance of both long and short-term goals of the Government.

### *Intergovernmental Relations*

Effective July 1st, 1983, Intergovernmental Relations was transferred to the Executive Council Office. The departmental objectives of the Executive Council Office were reviewed with particular attention to the intergovernmental relations function, policy review and analysis, and the support to other departments in the performance of these functions.

The Branch renewed and strengthened intergovernmental contacts with external orders of government during the year, and participated in a number of interdepartmental committees.

Departmental personnel were involved in Phase I of the implementation preparations for Yukon Indian Land Claims. The Branch coordinated Yukon's input to the Canada-USSR Science Exchange Program and the ongoing consideration of a Scientific Resource Centre in Yukon.

Protocol matters and visits to Yukon by diplomatic and consular officials and senior officials were coordinated by intergovernmental relations. The chairmanship of the Governor General's Canadian Study Conference was provided by the Branch. Three Yukon delegates attended the Conference.

### *Land Claims Secretariat*

Yukon Indian Land Claims negotiations culminated in an Overall Agreement-in-Principle later endorsed by the Federal Cabinet. The A.I.P. is in process of ratification by the Yukon Indian Communities.

Negotiations concerning the COPE claim proceeded with some difficulty. An "Inuvialuit Settlement Agreement" passed the Federal Cabinet with the sanction of the Government of Yukon by way of an Accord, signed by the Governments of Canada and Yukon and COPE. The Accord attempts to alleviate certain concerns expressed by the Government of Yukon respecting the COPE Agreement. The COPE Agreement is currently in the process of ratification by the relevant Inuit. Legal drafting is underway.

### *Internal Audit*

Responsible to Management Board, Internal Audit provides an independent review of the government's financial and management information systems as well as those operations resulting in the receipt and disbursement of public funds.

The continuing development and implementation of financial and management systems has increased the government's reliance on computer produced information to assist management in meeting their responsibilities for program delivery while maintaining accountability for the receipt and use of public funds. The objective of Internal Audit is to provide assurance to management of the integrity of that information and that an acceptable level of accountability for the receipt and use of public funds is maintained. The office also provides an independent review of programs funded under cost-shared agreements with Canada requiring audit verification prior to recovery of funds expended.

#### *The Federal Relations Office*

The Office, located in Ottawa acts as a communications link between the Government of Yukon and the Federal Government. Staff of the Office gathers information by attending intergovernmental, parliamentary and senate committee meetings and through daily contacts with federal officials. It provides assistance to departments of the Government of Yukon with respect to ministerial and senior officials visits, and represents Yukon at intergovernmental and federal-provincial ministerial meetings on request of the departments.

In 1983, a Fiscal Relations Officer from the Department of Finance was attached to the Ottawa office to coordinate financial negotiations with the Federal Government regarding formula financing.

#### *Public Affairs Bureau*

The Public Affairs Bureau provides support to Yukon government departments and activities in communicating programs and activities to the public.

Major activities included photographic and production assistance on audio-visual presentations by the Department of Tourism, Recreation and Culture, media and public relations support on the Department of Renewable Resources Predator Control Program, public awareness campaigns for the Department of Health and Human resources and co-ordination of the advertising needs of the Department of Education, Advanced Education and Manpower.

The bureau also produces the Government of Yukon's annual report, the monthly Yukon Info., the employee newsletter, Sluice Box, and the Yukon Facts booklet.

#### **Department of Consumer and Corporate Affairs**

The Department of Consumer and Corporate Affairs promotes and develops orderly and responsible commercial, employment and professional practices in Yukon. The Consumer Services section ensures that licenced professionals meet legislated qualifications; advises consumers of their legal rights and mediates disputes between landlords and tenants. The department increases consumer competency through the development and dissemination of educational materials.

Corporate Affairs provides an institutional framework for the orderly conduct of business and the accumulation and allocation of capital through maintenance of a number of registries.

Labour Services maintains and promotes basic employment standards; the development and maintenance of acceptable safety standards; and the development and acceptance of basic human rights for all Yukoners.

In 1983/84 the department transferred responsibility for administration of Transport Services, included weigh stations and motor vehicle registry, to the Department of Highways and Transportation.

#### **Department of Education**

##### **Economic Function: Education**

*The Advanced Education and Manpower Branch* is responsible for adult institutional training, apprenticeship training, tradesmen's certification, industrial training, post-secondary student financing, manpower planning and employment development programs.

#### **Program Highlights 1983-84**

An In-House Apprentice Program begun this fiscal year, provided skills training to twenty Yukon residents who would not have been able to continue their training given the current economic conditions.

The Yukon and Federal Governments jointly funded the Cyprus Anvil Stripping Program and Apprentice Program. Yukon contributed \$1 million.

Advanced Education and Manpower received approximately \$700,000 under the Canada Employment and Immigration Skills Growth Fund to upgrade Yukon College facilities to accommodate training in new technologies.

Yukon College offered programming ranging from academic upgrading through trades and technical to business administration and university transfer. Approximately 850 students participated in full-time programs, while 900 were involved in part-time programming. Community Learning Centres are located in a number of rural communities and a mobile unit provided introductory small engine repair training in three communities.

#### **Primary Goals and Objectives 1984-85**

Several programs offered through Yukon College will reflect new technological requirements of the labour market, including Computer Management, Engineering Design and Drafting Technology, Industrial Electronic Technology and Electricity. A second mobile unit will travel to three rural communities to provide instruction in Basic Home Repair.

The Manpower Planning and Industrial Training Unit will continue to work closely with Yukon employers to enhance the quality and quantity of employer-based training opportunities. The Apprenticeship unit will again sponsor trades upgrading courses to those wishing to obtain Journeyman status through Tradesmen Qualification Certification. Employment Development Programs will provide financial incentives to encourage employers to develop quality employment opportunities for Yukon residents.

*The Public Schools Branch* is responsible for the provision of primary, elementary and secondary education for all school age children in Yukon.

### **Program Highlights 1983-84**

A highlight of the 1983 school year was the hosting, by Yukon students, of the 1983 Interchange on Canadian Studies. The 1983 Interchange - 60 Above Au 60° - included over 300 Canadian students from across the country. The conference was supported, in part, by the Secretary of State - Youth Services Division.

Micro-computers were placed in every Yukon school and two-day inservice training sessions were held for all Yukon teachers.

A review and updating of the 1979 Sharp report was begun. The revised Rural School Study is expected to be completed by December 1984.

An Alternative Programs Co-ordinator, a Co-ordinator for the Gifted and a Special Education Co-ordinator were hired.

### **Primary Goals and Objectives 1984-85**

The program initiatives begun over the last year will continue. It is also expected that Alternative Programs and Programs for the Gifted will be implemented into school programming this year.

Capital projects this year will include the completion of the Ross River and Teslin Industrial Arts facilities. Phase Three of the Christ the King High School expansion will be completed.

### **Department of Finance**

#### **Economic Function: General Government Services**

The Department ensures that the Yukon Government's financial resources are planned, utilized and controlled in a manner consistent with the priorities of the Government.

### **Program Highlights 1983-84**

- Establishment of Management Board
- Proclamation of new Financial Administration Act
- Completion of Capital Plan
- Further advances on Fiscal Formula

### **Primary Goals and Objectives 1984-85**

- Development of pilot projects in program evaluation
- Upgrade the Financial Management Information System and development of fully-integrated computerized financial accounting system
- Implementation of Fiscal Formula
- Implementation of new Regulations and Directives under the Financial Administration Act

### **Department of Health and Human Resources**

#### **Economic Function: Health**

##### *Human Resources Branch*

### **Responsibilities**

The Branch administers the Social Assistance Act, the Rehabilitation Services Act, the Pioneer Utility Grant Act and the Yukon Seniors Income Supplement Act.

Programs and services the Branch delivers or oversees delivery of in a policy making capacity include: Social Assistance, the Yukon Opportunity Plan, Services to Seniors, Vocational Rehabilitation Services, Alcohol and Drug Services, Detoxication Services, Emergency Welfare Services, Pioneer Utility Grant, the Territorial Income Supplement and community development.

### **1983-84 Review**

- Capital construction at Macaulay Lodge to upgrade the facility, extend its life span and make it more suitable for caring for seniors with multiple health problems was begun.
- Macaulay Lodge staff was augmented.
- The Branch performed a cost/benefit study of the Yukon Opportunity Plan.
- A comprehensive review of Geriatric and Rehabilitation programs in the Yukon with a view to co-ordinating, refining and improving services was begun.
- A review of the Social Assistance Act, Regulations and Policies was begun and a second Social Assistance Appeal Committee was established.
- Contributions to Crossroads Treatment Centre for Alcoholism, the Yukon Rehabilitation Centre and the Yukon Women's Transition Home were made.
- Training programs in the Alcohol and Drug field to professionals and para-professionals were provided.
- The Handy-Bus Program in Whitehorse was taken over from the Department of Government Services.

### **Plans 1984-85**

- Capital construction and renovations at Macaulay Lodge will be completed.
- Alcohol and Drug Programs in Yukon will be reviewed and refined.
- The financial accountability of all programs will be improved.
- A reorganization of existing programs, resources and services in the Vocational Rehabilitation and Seniors area as a function of outcomes from the Rehabilitation and Geriatric Services Review will be begun.
- The Social Assistance Act, Regulations and policies will be reviewed.
- Community and institutional disaster response emergency training will be extended.

##### *Health Services Branch*

### **Responsibilities**

The Health Services Branch administers health and hospital insurance as well as community health services throughout Yukon. Legislation administered includes the Health Care Insurance Plan Act, the Hospital Insurance Services Act, the Public Health Act, the Mental Health Act, the Travel for Medical Treatment Act, the Cancer Diagnosis and Control Act, the Vital Statistics Act, the Marriage Act and the Change of Name Act. Specific programs include Medicare, Pharmacare, Extended Health Benefits, Family Life Services, Speech Pathology and Audiology and Vital Statistics.

### **1983-84 Review**

- A new computer registration system for the Health Care Plan was developed.
- General audiology equipment including a sound suite was acquired.
- Major amendments to the Mental Health Act were prepared.
- A Branch Operations Officer for the Health and Hospital Insurance programs was recruited.
- The Health Care Insurance Plan and Hospital Insurance Services Regulations were reviewed.

### **Plans 1984-85**

- The new registration system, including a re-registration of beneficiaries will be implemented.
- The premium collected computer system will be completed.
- A new medical claims insurance system will be designed.
- A new Health Care Insurance Plan Act and a new Mental Health Act will be developed.
- The Vital Statistics, Change of Name and Marriage Acts will be revised.

### *Community and Family Services Branch*

## **Economic Function: Welfare**

### **Responsibilities**

This Branch administers the Children's Act, the Day Care Act, the Corrections Act, (Part five) and the Young Offenders Act. The Branch provides a wide range of services for children and families, including adoption, foster care, day care subsidies, counselling and support services, residential services of various kinds and programs for young offenders. The Branch promotes public awareness of child abuse and neglect and provides grants to community based social services agencies.

### **1983-84 Review**

- The Branch was reorganized to provide a higher level of service to children and families.
- Fostered public input into the Children's Act.
- Prepared for implementation of the Young Offenders Act, in conjunction with other agencies.
- Increased the use of Family Support Workers, particularly in Whitehorse, thereby negating the need for some children to come into care and delaying others coming into care. The number of children in care continued to decrease and the Branch views this as a significant accomplishment.
- Increased the maximum amount payable per child in the Whitehorse Region under the Day Care Subsidy program.

### **Goals and Objectives 1984-85**

- To continue to promote public awareness of child abuse and neglect.
- To minimize the incidence of children needing to come into care by promoting community based services to children and families.

- To maintain and safeguard children under the care of the Director of Community and Family Services through the operation and maintenance of group homes, foster homes, specialized facilities for the placement of children and the provision of supportive, culturally appropriate services to the child and family.
- To encourage the development and operation of community based social services agencies.
- To assist in protecting the community from delinquency among its young people and to promote alternatives to delinquent behaviour.
- To provide facilities which have a safe and controlled environment for the detention, supervision, assessment and rehabilitation of young offenders.

### **Department of Government Services**

## **Economic Function: General Government Services**

The Department assists user departments in their program delivery and co-ordinates general services to all departments and agencies of the Yukon Government. Responsibility for the Emergency Measures Organization was transferred to Municipal and Community Affairs during 1983/84.

### *Property and Administration*

The branch provides a program of general insurance coverage for the government, office accommodation for all government departments and security programs.

### *Systems and Computing Services*

The branch ensures the effective and economic use of electronic information processing technology in support of government program activities. The branch comprises of a processing services section, a systems development group, and a service centre.

During 1983/84, twenty four new projects were initiated, whereas in previous years no more than three or four projects were undertaken. This higher level of activity will bring about much needed improvements to administrative and information systems in areas such as Health Services, the Motor Vehicle Branch, Property Assessments, the Public Service Commission, and many others.

The branch's IBM 4331 computer was replaced with a larger IBM 4341 to meet the growing demand for computer processing. More applications are going "on-line", and the number of on-line terminals doubled to about thirty. The computer centre went from one shift to two shift-a-day operation. The centre now processes close to two million transactions per year.

### *Supply Services Branch*

The Branch provides a uniform level of centralized services to all government departments and agencies and promotes the development of the Yukon business community through consistent purchasing practices. The branch comprises six sections: Purchasing, Queen's Printer, Asset Control, Transportation, Warehousing and Records Management.

During the year a computer program was developed and implemented for government asset records. Departments are now able to receive up to date records of their assets by location.

In 1982/83 purchase orders totalled \$24.3 million (77.3 percent within Yukon) and service contracts totalled \$9.4 million (76.6 percent within Yukon). Annual auctions of surplus materials produced a revenue of \$159,417. The central stores warehouse processed 5,054 departmental requisitions with a total value of \$970,140.

### *Public Works Branch*

The Branch constructs buildings and works on behalf of the Government of Yukon and maintains them in accordance with approved standards reflecting government and community needs.

Major construction projects in 1983/84 included the removal of asbestos from, and the subsequent re-insulation of various highway grader stations; the addition to Macauley Lodge; the addition to the Carcross school, and mechanical renovations at Whitehorse Elementary School.

## Department of Highways and Transportation

### Economic Function: Transportation

Responsibility for Motor Vehicles, Weigh Station operations and the Motor Transport Board was transferred during 1983/84 from Consumer and Corporate Affairs to Highways and Transportation. The department continued to operate a VHF radio communication system for Yukon and federal government departments, and also administered the Northern Exploration Facilities Program.

#### *Highway Maintenance*

In 1983/84, 200 km of bituminous surface treatment was added to main highways in Yukon. Of the total of 4,469 km of roads (maintained by 22 highway maintenance camps throughout the Yukon highway system), over 1255 km are now paved or have a bituminous surface.

#### *Highway Construction*

Grades were improved and BST<sup>1</sup> applied on 37 km of the Klondike Highway south of Carmacks. The Klondike Highway now has either a paved or bituminous surface from the Alaska Highway to the junction of the Campbell Highway. The 15 km section from the Dawson Airport to Dawson City was resurfaced and had BST applied. Additionally, BST was applied in the communities of Stewart Crossing and Pelly Crossing.

Reconstruction was carried out on 14 km of the Klondike Highway between the Alaska Highway and Carcross.

Culverts at Ross River #3 and #4 on the South Canol Road were replaced.

On the Dempster Highway, further grade improvements were made at two sites to reduce the winter maintenance required due to snow drifting. In addition, 46 km were reconstructed and new gravel surfacing applied to 61 km.

## *Airports/Ferries*

Yukon maintained 10 Arctic "B and C" airports with funding from Transport Canada. In addition, 20 emergency airstrips were maintained with Yukon funding. Yukon provided communication and weather services at Old Crow, Faro, Ross River and Teslin, while Transport Canada provided those services at Mayo, Dawson and Burwash.

Upon completion of a passenger/cargo shelter at Beaver Creek by Transport Canada, Yukon assumed operation of observer/communicator services at the Beaver Creek airport.

The department continued to operate a river ferry at Dawson and a barge at Ross River.

## *Transport Services Branch*

This Branch which includes the Motor Vehicles and Weigh Stations sections, provided support services to the Motor Transport Board. The Board is responsible for the economic regulation of the Yukon motor transport industry.

The Motor Vehicles section licences motor vehicles and drivers and administers related sections of the Motor Vehicles Act.

Weigh Stations enforced sections of the Motor Vehicles, Motor Transport, and Highways Acts related to commercial motor transport. A mobile enforcement officer was hired to increase enforcement capability.

Weigh Stations collected revenue under the Fuel Tax Act. Permits were issued and fees collected from commercial vehicles entering the Northwest Territories via the Dempster Highway, by Yukon Weigh Stations acting as agents of the N.W.T.

## Department of Justice

### Economic Function: General Government Services

The Justice Department provides legal advice and legal services to all departments of the Government of Yukon, and provides a variety of services to the public.

It administers the Yukon Supreme Court and the Territorial Courts in Whitehorse, the circuit courts to the other communities, and the Justice of the Peace Courts located throughout Yukon.

The land titles, public administrator and legal aid offices are also administered by this Department.

Probation Services maintains offices in Whitehorse, Watson Lake and Mayo and Institutional Corrections runs the Whitehorse Correctional Centre.

Policing in Yukon is carried out by the R.C.M. Police under a cost-sharing agreement with the Federal Government. Native Special Constables and Native Courtworker services are also provided by agreement.

The Department is responsible for the development of human rights policy and the Women's Bureau.

## Department of Municipal and Community Affairs

### Economic Function: Local Government

#### *Municipal Administration Branch*

#### **Responsibilities**

The Branch promotes the development of municipal government in Yukon, promotes financial stability, and provides for an equitable level of service in Yukon communities.

#### **Review 1983-84**

Amendments to the Municipal Act (1980) were passed during the 1983 Fall Session of the Legislative Assembly and the new Municipal Act came into force on January 16, 1984. A major provision of the new Act enables the Local Improvement Act to be repealed twelve months from the implementation of the Municipal Act.

<sup>1</sup> Bituminous Surface Treatment.

Watson Lake, the first local improvement district to become a municipality pursuant to the new Municipal Act, assumed Town status on April 1, 1984. The local improvement districts of Mayo, Teslin, Haines Junction and Carmacks are scheduled for incorporation during the remaining months of 1984.

An amendment to the Municipal Finance Act provides for a more equitable system of distributing municipal operating grants, by offering an assessment equalization grant that addresses the difference in assessments between Whitehorse and other organized communities.

Community roads, garbage dumps, and sewage treatment facilities were upgraded throughout Yukon. Building projects included upgrading of firehalls in Beaver Creek, Destruction Bay, Carcross, Carmacks and Ross River; conversion of an old liquor store to a firehall and ambulance station in Mayo; and construction of a new ambulance garage in Teslin.

The City of Whitehorse was provided with funding of \$1.1 million towards the upgrading of the existing swimming pool to that of a year round facility, and towards the surfacing of Mountainview Drive and Quartz and Copper Roads.

A bituminous surface treatment program for community roads was carried out in Whitehorse, Carmacks and Watson Lake.

#### **Plans 1984-85**

Following incorporation of existing Local Improvement Districts as Municipalities, the Department will work with unincorporated communities seeking Hamlet status. Local Government procedures and Legislation will be reviewed with reference to the Yukon Indian Land Claims Agreement – In-Principle. The Community Assistance Act will be updated.

#### *Lands Branch*

##### **Responsibilities**

The Lands Branch is responsible for the administration and management of lands under the control of the Yukon Government and for the orderly sale and leasing of community lands.

#### **Review 1983-84**

During the 1983/84 year, 95 sale agreements were signed with individuals and builders and a total of 290 cottage lot lease holders ere issued lease agreements or title to their lots.

In addition, 130 applications were received for agricultural parcels. Twenty-two agreements were signed with individuals and five other applications were approved.

#### **Plans 1984-85**

Major Land Development Projects for 1984/85 include acreage residential development in Whitehorse, Haines Junction, Carcross, and Carmacks; airport industrial lots at Mayo; and industrial lots at Haines Junction and Carmacks. Planning design and preconstruction development for Phase II of the acreage residential subdivision at Watson Lake; planning and site investigation for an acreage residential subdivision in Dawson City; site investigation and planning for a recreational cottage lot development; and design and planning of an agricultural subdivision in the Whitehorse area are anticipated to be underway in the 1984/85 year.

The Land Branch is expecting to table amendments to the Lands Act; regulations respecting the management of forest resources on Commissioner's Land; and new Area Development Regulations for Whitehorse North and the Golden Horn Area.

The transfer of recreational cottage lots from the Federal Government and the process of offering these lots for sale is largely complete. Remaining federal recreational leases will be surveyed during the 1984/85 year, transferred, and offered under agreement for sale to present lease holders.

#### *Assessment Services Branch*

### **Economic Function: General Government Services**

The Branch provides property assessment services to all Yukon Taxing Authorities by preparing assessment rolls for municipalities and the Yukon Government. Officers of the Branch defend assessments at Assessment Review and Appeal Board Hearings, assist the Territorial tax collector and provide a real property appraisal service to other Government Departments.

#### **Review 1983-84**

Assessors continued to update assessment on a five year inspection cycle. Reassessments were completed during the summer of 1983 in Dawson and Porter Creek. New assessments will be undertaken in Haine Junction, Watson Lake, Faro and parts of Whitehorse during 1984.

#### *Protective Services Branch*

##### **Responsibilities**

The Branch is responsible for the administration of legislation dealing with public safety, including fire protection, building inspections and most recently, the Civil Emergency Measure Act. The Yukon Ambulance Service is also operated by this Branch.

#### **Review 1983-84**

##### *Fire Section*

Fire training courses were conducted in ten communities for a total of 76 volunteer firefighters plus 14 other interested persons during 1983. In addition 280 school children were given a presentation of fire safety.

During 1983 there were 190 fires resulting in \$1 million property losses. In these fires, 7 people were injured but there were no fatalities.

##### *Ambulance Section*

The ambulance inspector conducted 16 First Aid Courses for a total of 219 participants and 4 Cardio-Pulmonary Resuscitation courses for 41 participants during 1983.

The 12 ambulance stations responded to 1168 emergency calls.

## Building Inspections

Three hundred and eighty building permits were issued during 1983, a significant increase over the past several years.

However, the total value of construction projects dropped to \$9 million. Inspections of wood stove installations also increased over the previous year.

## Boiler Inspections

Thirty-six examinations were held for heating engineers and 20 for pressure welders. Forty-six new boiler designs were registered, bringing the total in Yukon to 725 registered boilers and pressure vessels. The section recorded 273 inspections under the Boilers and Pressure Vessels and 28 under the Elevators and Fixed Conveyances Act.

## Municipal Engineering Branch

### Responsibilities

The Branch is responsible for managing and providing advice on municipal systems to organized communities and managing the Community Television System and Mosquito Control System.

### Review 1983-84

In April of 1983 the Branch was given the additional responsibilities of the Mosquito Abatement Program, Community T.V. System, and the Operation of Existing Water Distribution and/or Sewage Collection systems and garbage dumps in the unorganized communities.

During the 1983/84 fiscal year the Branch was responsible for over 50 capital projects involving expenditures in excess of \$3.5 million.

### Plans 1984-85

Major plans for the Branch for 1984/85 include upgrading the T.V. system, improvements to access roads, improvements to sewage disposal pits, continuation of the bituminous surface treatment program in various communities and completion of the Haines Junction Lagoon.

## Public Service Commission

### Economic Function: General Government Services

The Commission is the agent of the Yukon Government for all public service personnel matters.

The major issues dealt with during 1983/84 were:

- the enactment of restraint legislation for the 1983/84 and 1984/85 fiscal years (6 and 5 program);
- the negotiation of a one year contract with the Public Service Alliance of Canada under the provisions of this legislation;
- the rollback of the second year of the contract with the Yukon Teachers' Association to comply with the 6 & 5 program;
- the development of a policy concerning Unwanted Sexual Attention;
- the development of a policy concerning Unwanted Sexual Attention;
- the establishment of a resource library;
- the development of a costing model for collective bargaining purposes;
- the commencement, and in a number of cases the completion, of full scale organizational reviews of five government departments as well as the commencement of a government-wide organizational review at the senior management level. The reviews were all conducted by consulting firms retained by the Commission.

### Recruitment and Labour Relations

During the year, a one year contract was negotiated with the Public Service Alliance of Canada under provisions of restraint legislation. Regular joint consultation meetings were held with the union and in mid-year, a format for regular joint consultation meetings with the Teachers Association was established with Commission representation.

Permanent Appointments from Outside the Public Service:	
a) From within Yukon	317
b) From outside Yukon	36
Permanent In-Service Appointments:	
a) by promotion	34
b) by transfer	60
Casual Appointments (including contracts)	1496
<b>Total Appointments</b>	<b>1849</b>

## Employee Records and Pensions Branch

Two pre-retirement seminars were held. Employees and their spouses attend such seminars at Public Service Commission expense.

## Training and Development Branch

The branch assisted line departments in developing competency profiles, training plans and evaluation methods for on-the-job training of employees and underfill candidates (those hired with departmental commitment to train them to the full operating level).

## Compensation

The branch is responsible for job evaluation, classification, compensation, organizational reviews, costing of bargaining demands and staff establishment control.

## Department of Renewable Resources

### Economic Function: Economic Development - Other

The Department is responsible for planning, managing and developing Yukon's renewable resources, and consists of three major branches, Resource Planning and Management, Wildlife and Parks Services and Administration.

### Resource Planning and Management

This branch comprising two sections, Wildlife Management and Land and Resource Management, is responsible for management and research on wild animals and birds. In addition, it provides advice on land-use matters, assists the Department's education and public relations projects and cooperates with other governments on wildlife or habitat projects that overlap political boundaries or jurisdictions.

## *Wildlife Management*

The wildlife management section is presently involved in some 25 wildlife and habitat projects. The more significant ones are briefly summarized as follows:

This is the third year of an intensive investigation of moose and predators in game management zones 7 and 9. Radio-equipped moose and wolves allow the department to assess the productivity of the moose population, and the causes of calf and adult mortality. Last year's data indicate that grizzly bears take a high percentage of young moose calves. During 1984 this study will therefore be expended to include a population study of grizzlies and wolves.

Wolf management and research began in 1983 in the southwestern Yukon, as part of the moose-predator study. Wolves were surveyed in a 6500 km<sup>2</sup> area in March 1983 and a 15,000 km<sup>2</sup> area in 1984. Radio telemetry studies of 28 marked wolves in 11 separate packs allowed for the establishment of predation rate data, territorial dynamics and population density data.

An intensive sheep-wolf study was initiated, designed to examine the ecological relationship of gray wolves to Dall sheep. A wolf reduction program was begun.

Long-term monitoring of the Porcupine Caribou herd numbering 12,000 animals and of its harvest continued as did monitoring of certain sheep and goat populations.

The Department initiated a muskrat investigation in the Old Crow Flats area of northern Yukon, and began a population study of wolverine in the Kluane Lake area in cooperation with the University of Victoria.

The fur-bearer section continued its involvement in trappers' education, including humane trapping methods, pelt preparation, and fur marketing.

The annual, detailed monitoring of fur-harvests by trappers continued.

This year saw the continuation of several birds of prey projects; the initiation of several new ones and the completion of others. On-going management projects included peregrine falcon reintroduction and population surveys on the lower Yukon River, waterfowl (primarily geese) surveys of rivers in the Peel River Drainage, and monitoring of gyrfalcon populations. Annual ptarmigan censuses were conducted at Haines Summit, North-Fork Pass and the Cantung Road Summit; sharp-tailed grouse were censused at Burwash Uplands.

The data processing section is responsible for the annual assessment of big game and fur-bearer harvests, it also assists biologists in the analyses of research data.

The laboratory was involved in data collection for several projects. Skull, horn and kill information was collected from those game species designated as mandatory submissions. Sheep and goat jaws from all animals shot were again inspected for the continuing assessment of tooth and bone disease.

Wolf and wolverine carcasses were necropsied and analyzed to determine sex/age structure, litter size, reproductive potential, body weights and measurements, stomach contents and general physical condition. Samples of prey were collected at wolf kills during the winter to determine species, condition, sex and age.

Seventy-six grizzly and 76 black bear skulls of hunter-killed animals were measured.

## *Land Management*

Initial resource inventories were completed for proposed Territorial Parks at Coal River Mineral Springs and Frenchman-Tatchun Lakes. Road access to new campgrounds at Tatchum and Frenchman Lakes were surveyed, planning for the campgrounds was completed. Construction of the campground at Tatchum Lake was begun.

Planning was completed and construction begun for a new campground at Moose Creek.

Boundary surveys were completed for campgrounds at Tatchum Lake, Pine Lake, Lake Creek, Fox Lake, Laberge and Wolf Creek.

## *Wildlife and Parks Services*

Branch responsibilities include the development, administration and enforcement of resource related legislation and the Pounds Act and Brands Act.

The Branch is also responsible for the construction, rehabilitation and maintenance of Yukon campgrounds, parks, and the rehabilitation and stabilization of historic sites. Pine Lake and Carcross Campgrounds were completed and are now open to the public. In addition, work commenced on the Tatchum-Frenchman Park Complex, and Moose Creek Campground. Other rehabilitation and expansion occurred in campgrounds such as Million Dollar Falls, Aishihik Lake, Klondike River, Yukon River, Tagish and Squanga Lakes. Work is also continuing on the rehabilitation and stabilization of historic sites at Fort Selkirk, Hootalinqua and the Tutshi.

The volunteer auxiliary conservation officer program was intensified.

A number of publications and audio-visuals were developed and produced by the Information and Education Section of the branch; these included "Be Bear Aware", Renewable Resource Bulletins 1 to 10, "Yukon Bear, Bacon and Boot Grease" and "Yukon Moose: In Decline?". In addition, the section presented courses on outdoor education and firearm safety, coordinated numerous public meetings, and continued with the development of a new Outdoor Education Firearm Safety Training Manual, scheduled for completion in early 1984.

## **Department of Tourism, Recreation and Culture**

### **Economic Function: Culture and Recreation**

The Department is responsible for the development and management of libraries and archives services; recreation services and heritage resources. The key responsibilities of Recreation are to encourage and support the development of sports, arts, community recreation and fitness opportunities. The Department also manages the Yukon tourism industry by administering an extensive tourism marketing and development program. The Department will coordinate Yukon's participation in the 1986 World Exposition in Vancouver.

## Organization

The Department has five line programs:

1. Libraries and Archives
2. Heritage and Cultural Resources
3. Tourism
4. Recreation
5. Expo '86

## Libraries and Archives Branch

In February 1984, the Library Services Branch and Yukon Archives were merged into one Branch with 3 main activities: Yukon Archives, Technical Services and Public Library Services. The objectives of the new Branch are:

- To provide public library services and increase community involvement in library development.
- To provide for the adequate documentation of the history of Yukon.
- To maintain and preserve the Government's records in accordance with the Archives Act.
- To provide for the implementation of the Access to Information Act.

### Yukon Archives

In 1983-84, the Yukon Archives were used by more than 4,200 researchers. The photographic technician processed 2,912 orders.

A Summer Canada '83 project was sponsored by the Yukon Historical and Museums Association at the Archives. All manuscript collections were subject analyzed so as to be more accessible for the public. In addition, a finding aid was prepared to the Whitehorse Copper Ltd. records. A project was undertaken in the fall during which the subject authority file was completed, archives displays were repaired and photographic collections were conserved and processed.

Katimavik volunteers worked in the Archives from September 1983 - February 1984 and provided valuable assistance to staff.

A bibliography on Martha Louise Black was prepared in addition to a display on the Yukon Expedition 1887-88 and Sam McGee. An Open House in November attracted 150 visitors and archives displays were shown in Dawson City, Keno, Whitehorse, Fort Smith, Northwest Territories and Ottawa, Ontario. A conservation workshop for museum personnel was sponsored.

The Access to Information Act become law in November 1983 and provides for public access to information in Government files. The point of access is the Yukon Archives. An inventory of all Government records is underway to assist members of the public in finding required information. A related brochure was prepared for distribution throughout Yukon.

One hundred and five new collections were acquired this year. These included:

Girl Guides of Canada, Yukon Council	1964-79
Boy Scouts Association of Dawson	1940-63
Victoria Faulkner Papers	1896-1979
Sam McGee Miscellany	1905-1961
William Charles Peter photographs	1901-04
Allen Wright Collection	ca. 1824-1982
Willis Grafe Collection	ca. 1942-1982
Gudrun Sparkling Photograph Collection	ca. 1925-1945
Geoff Bidlake Photograph Collection	ca. 1920-1958
Bill Hare negatives	1922-1940's
Alan Fry, Old Crow Collection	1964
Territorial Treasurer records	1914-71

### Library Services

The Technical Services section acquires, processes and distributes books to schools and public libraries throughout Yukon. The Public Library Services section provides a variety of services to public libraries including the operation of the Whitehorse Public Library, grants to branch libraries and audio visual hardware and software.

A new branch library was developed in cooperation with the school library in Teslin. A workshop was held in October and was attended by librarians and library board members from most branches in Yukon.

L'Association des Franco-Yukonais presented a number of French books to the Whitehorse Public Library. These books, along with others, were fully catalogued and made available with French headings and subject entries.

The library participated in the Children's Book Festival and in the National Book Festival during which prominent authors gave readings in Whitehorse and a number of other Yukon communities.

New branch libraries will be developed at Carmacks and Carcross. A librarian workshop will be held. Both library and archival materials will be centralized in these communities.

### Plans for 1984-85

Plans for 1984-85 include the development of 4 new small displays at the Yukon Archives, the preparation of a finding aid to the Erik Neilson papers and the implementation of the Access to Information Act.

## Department of Tourism, Heritage and Culture

### Economic Function: Culture and Recreation

#### Heritage Branch

##### The Branch

- Co-ordinates and develops heritage policies and programs in Yukon.
- Develops policies and programs for local museums support and development.
- Identifies, develops and manages territorial historic sites.
- Operates the territorial Art Gallery.
- Regulates scientists and explorers and archaeological activity in Yukon.

#### Program Highlights for 1983-84

- Historic building in Fort Selkirk and Dawson City were stabilized.
- Six local museums were given \$120,000 for capital and operational requirements.
- Heritage Policy Paper was released in September. Related public meetings were held in 10 communities in February.
- The Permanent Collection and Art Bank acquired 24 art works.

### **Objectives for 1984-85**

- Complete a heritage policy review.
- Develop Yukon Toponymic Program.
- Implement the Beaufort heritage survey and assessment program.
- A Museums Advisor will be recruited and in place by April 1984.
- Structures stabilization at five historic sites will continue.
- The Art Gallery will organize two special exhibitions for 1984 - Year of the Arts.

### *Tourism Planning and Development Branch*

## **Economic Function: Economic Development - Other**

The Branch is responsible for coordination with industry in the areas of planning; i.e., developing tourism strategies and development of tourism attractions and related infrastructure.

The Branch was also responsible for the implementation of the Canada-Yukon Tourism Agreement (CYTA), a \$6 million, three-year tourism development program which concluded in March 1984. Yukon contributed \$900,000 to this joint program with the balance provided by the Federal Government. All CYTA projects are now complete, and an evaluation of the entire program is underway.

Projects successfully completed under CYTA include:

In Dawson:

- Construction of new Downtown Hotel
- Expansion of Triple J Cabins Motel
- Construction of new Visitor Reception Centre with an historic design
- Construction of historic facades on twenty buildings
- Construction of pedestrian boardwalks throughout the downtown area
- Renovation/expansion of Diamond Tooth Gertie's Gambling Casino

In Whitehorse:

- Restoration of Old Log Church
- Renovation of Visitors Reception Centre
- Development of Guild Hall Society theatre

Other Projects include

- Assistance for lunch/theatre program in Carcross
- A new Visitor Reception Centre in Carcross
- Development of Alaska Highway Interpretive Centre in Watson Lake
- Provision of financial assistance for three wilderness adventure guided tour companies

A number of reports and studies were produced by the research and planning program. These include:

1982 Visitor Exit Survey  
Kluane Region Tourism Development Plan  
Wilderness/Adventure Travel Industry Analysis

1983 Coupon Conversion Market Research

Branch programs, other than those included under CYTA, include the continuing placement of "point of interest" signs along Yukon highways.

Throughout 1983/84, the Branch co-ordinated, with the federal Dept. of Regional Industrial Expansion, implementation of the Tourism and Small Business Incentives Program, a one-year interim financial assistance program designed to fill the gap between CYTA and a longer-term General Development Agreement. TSBIP assisted many significant tourism projects, including reconstruction of the Midnight Sun restaurant/hotel (which burnt down in 1982) in Dawson City, development of major new campgrounds in Dawson and Whitehorse, expansion of two hotels in Watson Lake, and development or improvement of several wilderness travel services.

### *Tourism Marketing Branch*

The objective of the Branch is to develop visitor traffic to Yukon.

In 1983, 394,000 visitors to Yukon spent an estimated \$77 million. 1983 saw the largest number of annual border crossings ever recorded. Of these 61% came from the United States, 30% from other parts of Canada and 9% from overseas.

Highway traffic via motorcoach and personal vehicle accounted for 86% of all visitors, the highest proportion ever recorded. Air traffic decreased by 17%.

In 1983, over 80,000 inquirers for Yukon travel information were sent the Yukon travel guide, "Yukon - You're More Than Welcome". An additional 120,000 guides were distributed through automobile associations, travel agents, tour operators, Tourism Canada, hotels and travel information centres within and outside of Yukon. A total of 20,000 Yukon Travel Agents Manuals were distributed to tour operators, travel agents and airlines and to fulfill direct inquiries.

To further promote travel to Yukon, 135 travel influencers from nine countries visited the territory including 2 tour operators, 70 travel agents and 63 writers and TV film crew members. Eight 60-second TV vignettes were produced on Yukon and its people and are being used as fillers or Public Service Announcements on 72 TV stations across Canada and are also being distributed throughout the U.S.A.

Two travel brochures were produced; one in French, the other in German.

The Yukon Cooperative Tourism Marketing Committee, which includes representatives from industry and government, continued as the central marketing coordination agency guiding the ongoing joint marketing program with the State of Alaska, travel agents promotions and overseas marketing.

### **Plans 1984-85**

A 16 mm Yukon travel film for distribution world-wide throughout Tourism Canada and the National Film Board offices will be completed.

Increased publicity will be given to outdoor adventure in four different regions of Yukon.

The Japanese market for the Yukon tourism product will be developed.

## *Recreation Branch*

### **Economic Function: Culture and Recreation**

A new Recreation Act and Public Lotteries Act passed in the Fall session of the Legislative Assembly resulted from a two-year public recreation review process. The new Recreation Act provides for an expanded mandate and increased resources at the community level and provides new support to territorial arts and sports programs.

The 1984 Arctic Winter Games saw 300 Yukon athletes, coaches and officials compete in this eighth biennial transarctic event held in Yellowknife, N.W.T. Yukon won the Stewart Hodgson Trophy for the most sportsmanlike contingent for the third consecutive time.

The seventh annual recreation seminar provided recreation volunteers from across Yukon with information related to the new Recreation Act.

Twenty-three territorial sport organizations received approximately \$190,000 in assistance for administration, training and competition. Territorial arts and special recreation groups received \$65,000 in assistance for administration and various developmental programs.

The Recreation Branch's new advanced artist development grant program funded six visual and performing artists. The elite athlete assistance grant helped six athletes eight Yukoners placed in the top 3 of various National Competitions.

Yukon communities were provided \$120,000 in assistance for community based recreation sport and arts activities. The Summer Pool Program ran in nine communities across Yukon. Responsibility for this program, like many other recreation services, has been gradually turned over local communities.

The Yukon Lottery Commission with administrative support from the Recreation Branch provides \$70,000 to various special sports and arts projects. Communities were provided with \$38,000 of discretionary funding.

For the first time, Yukon sent its best weightlifters and boxers to the Western Canada Games. Yukon fared well in this pre-olympic competition, bringing home two gold medals.

With Recreation Branch support, Yukoners participated in:

- Northern B.C. Winter Games
- Canadian Heritage Festival
- World Universiade Torch Relay
- National Physical Activity Week
- Canada Fitness Awards
- Canada Fitness Awards
- Fitness Leader Training

## **Department of Economic Development**

### **Economic Function: Economic Development - Other**

The Department is responsible for coordinating the formulation, development and implementation of short medium and long term economic development strategies plans and programs for Yukon. These responsibilities are discharged by a number of Branches, the activities of which are described below.

#### *Economic Research and Planning Branch*

The Economic Research and Planning Branch has responsibility in a broad range of areas, including: Mineral Development, Business and Industrial Development, Economic Research, Economic Development Planning, and Statistics.

Goals are:

1. To develop the capability to assume full responsibility for the planning, management, and development of non-renewable resources.
2. To promote, enhance and diversify business and industry in all sectors of the economy.
3. To formulate policies and programs which will stimulate economic growth and development.
4. To develop and co-ordinate a comprehensive economic development strategy and planning process required to ensure orderly development and diversification of the economy.
5. To provide a complete socio-economic research and analytical support service to Government.
6. To provide full statistical services to the public and private sectors.

#### *Mineral Development*

The Mineral Development group undertook a comprehensive evaluation of the new regulatory regime for the placer mining industry. The project included the preparation in co-operation with Renewable Resources, of a Position Paper which formed the basis of the Government of Yukon's intervention before the Yukon Placer Mining Guidelines Public Review Committee in September. Stemming from that Position Paper and the resultant Review Committee's report, there have been continuing discussions with the Federal Government and with the industry concerning the development of an equitable regulatory regime for the Territory in concert with increased research and development into the Placer Mining industry. Two major studies intended to provide further data on the placer mining industry were developed during the past year, and will be implemented in the 1984/85 fiscal year.

Other projects undertaken during the year by the Mining group included:

- (a) A proposal to protect the northern Yukon source of Lazulite, Yukon's official gemstone.
- (b) A draft discussion paper on the Yukon Resource Development Policy.
- (c) A discussion paper on mineral development in Yukon for the third National Workshop on People, Resources and the Environment north of 60°.
- (d) Preparation of a draft Canada/Yukon Agreement on Mineral Development.
- (e) Preparation of a Regional Resource Roads Policy including proposed program for construction of selected regional resource roads.
- (f) Participation with the Federal Government on a number of major committees intended to provide mechanisms for solving the present problems of Canada's mining industry.

### *Business and Industrial Development*

In 1983/84, the Branch prepared a comprehensive Business Development Assistance Program for small business. This program provided a broad range of initiatives including business marketing and promotion, business advisory services, and a series of financial incentives. In co-operation with the Yukon Chambers of Commerce and the City of Whitehorse, a number of business marketing activities were undertaken during the fiscal year, and the Government of Yukon provided \$500,000 in the Capital Budget for use in providing financial incentives to Yukon's small business community. The addition of new staff to the Business and Industrial group provided the opportunity for initiating a strong business advisory service for the Territory during the last three months of the fiscal year.

A number of projects were undertaken by the Business and Industrial Development group including:

- (a) The provision of business assistance to 28 small business entrepreneurs during the first three months of 1984.
- (b) *Initiation of a Major Advertising Campaign:* Based on the theme "Yukon: We Mean Business", an advertising campaign was run in six publications across Canada including the "Financial Post" and the magazine "Canadian Business".
- (c) *Involvement in Trade Shows and Trade Missions:* The group actively participated in a number of trade shows and business promotion tours throughout Western Canada. The Business and Industrial Development group travelled to Calgary and Vancouver on a major tour in February, 1984 and was involved in the Whitehorse Trade Show.
- (d) *Publication and Distribution Worldwide of the 1984 Business Directory:* Approximately 1,500 copies were distributed throughout Western Canada and Alaska.
- (e) Acquisition of a thirteen-film series entitled "How to Start a Business".
- (f) Preparation of an audio-visual presentation entitled "Whitehorse: City of the Future with a Golden Past".

### *Economic Research*

The Economic Research and Planning Branch undertook a variety of economic research activities during the past fiscal year. These activities included:

- (a) An economic forecast of Yukon's economy entitled "Economic Growth in Yukon 1983 to 2003".
- (b) A study on the desirability of a wine and liquor bottle return system in Yukon.
- (c) The Yukon Economic Model.
- (d) Development of an Input/Output Table for Yukon.
- (e) Short term economic forecasts on Yukon's economy.
- (f) Study on the viability of a regional air system for Yukon.
- (g) Preparation of a brief to the Air Transport Committee on the desirability of de-regulation of the airline industry in Canada.

### *Economic Development Planning*

As part of its mandate to develop new concepts for enhancing Yukon's economic development potential, the Economic Research and Planning Branch undertook a variety of activities during the past fiscal year. In particular, the Economic Research and Planning Branch undertook to prepare an Economic Development Strategy for Yukon in the 1980's which was used as part of the negotiations for the new Economic Development Agreement. In addition, the Branch prepared, in co-operation with various Yukon Government Departments, a broad range of proposals to be included as part of the Economic Development Agreement. Proposals were prepared in the areas of tourism and business development, renewable resources, human resources development, mineral and energy development, and community development. In total, the planning program outlined by the Branch included initiatives totalling over \$54 million. These, in large part, form the basis for the successful negotiation of the Economic Development Agreement, for which the Branch was responsible. Other economic development planning activities included the preparation of background material for use in the Canada Transport Committee inquiry into Yukon's transportation system, and initial investigation on the development of an air policy for Yukon.

### *Statistics*

The Statistical Services group provide a broad range of statistical information and advice to the Government of Yukon and the public at large. In the past fiscal year, the Statistical Services group has provided statistical advice and information to over 1,200 interested individuals. In addition, the group undertook a variety of data development activities including: Re-design of the Labour Force Survey, Demographic Research on the Health Care Record File, initiation of a process to develop a standardized set of economic accounts, development of a Community Profile for Yukon, and initiation of a project to provide an annual Statistical Review for Yukon. In addition, the group continued to disseminate a broad range of information including the Yukon Economic Review, the 1981 Census Summary, the Revenue Canada Statistical Summary and the 1983 Spatial Price Survey. Finally, the group provided technical advice and assistance to Departments and individuals on various aspects of statistical analysis.

### *Responsibilities*

Energy Branch has been responsible for developing energy policy for the Yukon Government; developing and implementing CREDA, Yukon ECIP, Special ARDA; and developing new programs. Upon the cessation of bilateral funding on April 1, 1984 these programs will end.

### *Review 1983-84*

During 1983/84 the Energy Conservation Incentive Program (ECIP) was particularly active completing 60 audits. Total costs of audit recommendations was \$1.2 million. Total Incentive grants approved was \$371,500. Total annual energy savings from implementing recommendations was \$325,000. Under the Conservation and Renewable Energy Demonstration Program (CREDA) two projects with a total grant contribution of \$170,750 were approved during the year.

Special ARDA,<sup>1</sup> in its final year helped fund 17 projects contributing \$209,000 to the \$309,000 total project costs.

<sup>1</sup> Agricultural and Rural Development Agreement

### Plans 1984-85

The Energy Branch will continue its work on Energy Policy development. This year the Energy Branch will be administering and delivering Yukon programs as opposed to bilateral programs. Three new programs will be undertaken: Internal Energy Management Program; Yukon Energy Alternatives Program (YEAP); and Saving Energy Action Loan (SEAL).

The Internal Energy Management Program will see Energy Branch Staff, acting as resource personnel, help to meet government energy conservation objectives. YEAP is designed to assist the identification of alternative energy options for Yukon communities and industries. SEAL is designed to act as an incentive for homeowners who wish to upgrade their residences from a energy conservation point of view.

### Major Projects Branch

The Major Projects Branch, established in 1983, co-ordinates Yukon Government activities related to major project development in northern Canada, and provides a communications link with industry.

### Review 1983-84

Branch activities during the year under review included:

- Coordination of the Yukon Government's presentations to the Beaufort Sea Task Force and to the North Slope Project Review Committee.
- Preparation for Yukon Government Membership on the Yukon Benefits Committee.
- Coordination of Yukon Government activities vis à vis the Northern Oil and Gas Action Program (NOGAP).

The Branch has been in regular contact with the major Beaufort operators regarding business and employment opportunities for Yukoners, and has acted as a point of contact for industry and other agencies, provide material related to project development to government departments, business organizations and other interested parties.

### Plans 1984-85

Projects outlined above will become full-time Branch responsibilities. In the upcoming year, the Canada Benefits Programmes of the oil exploration industry will be reviewed by the Yukon Benefits Committee. This Committee will ensure that a reasonable proportion of industry expenditures are made in the Yukon. The NOGAP research projects will commence about mid-year. Information generated from these projects will enable the Government to plan development phase impacts of Beaufort activities on the Yukon.

### Special ARDA

The Special ARDA program, which has been in operation in Yukon since 1978, expired in April 1984. It was designed to improve the standard of living and to create new opportunities for increased income and employment of people in rural areas, particularly those of native ancestry.

### Activity to year end

Projects funded:	131
Funding committed:	\$4.7 million
Job created:	340
Wage income generated:	\$8 million

### Yukon Workers' Compensation Board

#### Economic Function: General Government Services

#### Responsibilities

The Workers' Compensation Board administers the Workers' Compensation Act and adjudicates all matters arising under that Act. The Board guarantees that compensation and pensions awarded to injured workers or their dependants be paid for as long as they are entitled to receive these benefits.

In co-operation with the Yukon Department of Justice, the Workers' Compensation Board administers the compensation under the Victims of Crime Act, to ensure that victims of crime or their dependants who are faced with financial difficulties as a direct result of a criminal incident receive any compensation to which they are entitled.

### Review 1983

A total of 1059 claims were reported during 1983 as compacted to 1354 in 1982. Increases resulted from Section 79 of the Act which increases the amount of compensation in accordance with changes in the Consumer Price Index. The amount of the increase at January 1, 1983, was 10.8%. During 1983, 1545 employers established accounts.

The Workers' Compensation Act was amended by the Legislative Assembly in 1982 effective January 1, 1983. The major amendments are:

- Changes in the system of pensions to nominal lump sums related to the severity of the permanent handicap, annual review of the actual earning power and compensation based on the actual loss of earnings, to age 65.
- Provision of an annuity at age 65.
- Changes in the claim appeal procedures to assure impartiality and a more thorough review of all evidence.
- Increase in pensions to dependant widows and widowers to \$165 from \$144 per month.
- The appointment of a full-time Chairman and two part-time members rather than as previously, a part-time Chairman and three part-time members.
- Independent operators and directors of limited companies may make application for personal coverage on a voluntary basis.

#### Workers' Compensation Legislation

The Workers' Compensation Act was amended by the Legislative Assembly in 1982 effective January 1, 1983.

#### Major Amendments

- The system of pensions based on clinical evaluation of disablement in percentage terms was abandoned in favour of a two phase approach. The first phase provides nominal lump sums related to the severity of the permanent handicap. The second phase is that the actual earning power is to be reviewed annually and compensation be based on the actual loss resulting from the injury, to age 65.

- An annuity at age 65.
- Changes in the claim appeal procedures, which assures a more thorough review of all evidence and assures the worker of impartiality.
- Pensions to dependant widows and widowers were increased to \$650 from \$438 per month.
- Pensions to dependant children were increased to \$165 from \$144 per month.
- The appointment of a full-time Chairman and two part-time members. This was a change from the previous practice of having a part-time Chairman and three part-time members.
- Independent operators may make application for personnal coverage on a voluntary basis.
- Directors of limited companies rendering a service to the corporation may make application for personnel coverage on a voluntary basis.

#### *Assessments*

During the year, 1,545 employers established accounts compared with 2,061 during the year 1982. Provisional figures indicated an assessable payroll at \$182,698,000.

The maximum assessable earnings was \$25,000 per annum. The minimum coverage available to proprietors, members of their families and to members of partnerships was \$7,000 per annum.

#### *Increased Benefits*

Benefits increase at January 1, 1983 was as follows:

- Lump sum payments to dependant widows or widowers who remarry were increased to \$6,111 from \$5,515.
- Payments to dependant widows or widowers for additional expenses resulting from the death of a worker were increased to \$1200 from \$1101.
- Payments for necessary burial expenses were increased to \$1,397 from \$1,261.
- Payment for transportation of body was increased to \$247 from \$223.
- Existing pensions for permanent disability were increased by 10.8 percent.

#### *Claims*

The number of claims reported to the board during 1983 was 1,059 compared with 1,354 during the year 1982.

There was one compensable fatal accident during 1983, compared with seven during 1982.

#### *Appeals*

The Board heard 86 appeals while 21 cases were referred under Section 22.

#### **Yukon Housing Corporation**

### **Economic Function: General Government Services**

#### **Highlights 1983-84**

The Corporation acts as the housing agency for the Yukon Government. As a crown corporation, with a Board of Directors, it administers government programs and funds to improve housing conditions for all Yukoners. Major activities involve the supply and management of housing for low-income families, senior citizens and Government of Yukon employees.

During the past year of operation the Corporation took a number of steps to improve its programs and housing portfolio. The rental policies for both the public and employee housing programs underwent major adjustments, resulting in a more equitable and standardized rental policy for all tenants. The Corporation's five-year program to reduce energy consumption is in its fifth year of operation. During the year 63 units were upgraded under the Federal C.H.I.P. and C.O.S.P. programs. An additional 51 units were upgraded under the Federal Energy Management Off-Oil Program.

During the summer, a number of construction projects were carried out. Foundation upgrading work was completed on 6 single detached units in Dawson, six units in Ross River and eight units in Faro. In the first year of the Dawson historic facade program, four single detached units were upgraded to meet the local historic building standards.

A new 4-Plex senior citizens' structure was completed in Dawson in early September, which met energy efficient and handicapped livability standards. In Whitehorse, a recreation centre was completed for the residents of Greenwood Place, a 36-unit senior citizens project.

The Corporation began a massive fencing and landscaping program for its single and multi-unit housing structure in a number of communities.

Under the Yukon Conservation and Renewable Energy Demonstration Agreement (C.R.E.D.A.), the Corporation provided project management services to assist senior citizens to improve the energy efficiency of their homes. In conjunction with this program the Corporation carried out energy retrofit work to the Alexander St. Residence, in Whitehorse.

#### **Yukon Liquor Corporation**

### **Economic Function General Government Services**

#### **Responsibilities**

The Yukon Liquor Corporation regulates, imports, distributes and retails alcoholic beverages within Yukon and ensures that the requirements of the Liquor Act, and regulations are met.

The Liquor Board granted four new Restaurant Wine and Beer Licences, one Tavern Licence, three Dining Room Licences, two Liquor Mess Licences and one Cocktail Lounge Licence. Interim liquor licences were granted to three establishments under receivership.

The Corporation suspended liquor licences of two establishments for infractions of the Liquor Act and Regulations, and cancelled two Special Occasion Permits during the year.

#### **Liquor Sales Throughout Yukon Including Surcharge**

	1983-84	1982-83
Spirits	\$ 5,978,457	\$ 6,101,352
Wine	2,081,680	2,117,637
Beer	6,854,008	6,826,477
Total	\$14,914,145	\$15,045,466

Liquor consumption amounted to 786,461 gallons in comparison to 819,925 gallons during the year 1982-83.

#### *Licensing and Inspection*

	1983-84	1982-83
Spirits	277	267
Wine	588	519
Beer	122	134
Other	9	4
Total Licences & Permits	996	924



# Annual Northern Expenditure Plan 1984-1985

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# The Concept of the Annual Northern Expenditure Plan

## Introduction

Federal departments and agencies and the governments of the Yukon and Northwest Territories are surveyed each year to obtain information regarding their recent and proposed annual expenditures on programs and activities in or for the two territories. In the aggregate, the expenditure data thus collected constitute the northern expenditure plans of the federal and territorial governments.

## Policy Framework for Northern Expenditure Planning

In 1971 the government of Canada approved a northern development policy that established seven national objectives for northern Canada. These objectives were designed as a policy framework for the formulation, coordination and implementation of all federal and territorial government programs concerned with northern Canada, and to provide a common basis for federal and territorial governments to plan and implement their northern programs. At the same time, they present a special challenge in joint planning and coordination among the three governments involved, given the multiplicity of departments and agencies through which each government discharges its responsibilities north of 60°. Accordingly the preparation of an annual northern expenditure plan was undertaken to facilitate a co-ordinated and balanced approach to allocation of the human and financial resources of government in relation to the government's northern objectives.

## Scope and Nature of the Data Survey

### *Geographical Area and Time Frame*

The terms north, northern and north of 60° refer to the Yukon and the North-west Territories: Expenditures north of 60° relative to Arctic Quebec and Labrador are not included in the data.

Agencies\* were asked to provide data for a four-year period: planned expenditures for 1984/85, forecast expenditures (at the time of the survey) for 1983/84 and actual expenditure for 1982/83 and 1981/82. It is important to note that the data for 1984/85 are based on expenditure plans contained in the Main Estimates published by the federal and territorial governments for that year; as such, they represent spending plans that are subject to change in response to shifts in priorities.

### *Nature of Data Included in the Survey*

To ensure maximum reliability in the data, agencies were asked to report only direct northern expenditures. Direct expenditures are (a) those that take place physically north of 60°; (b) those made to achieve departmental or program objectives exclusively for the North; or (c) those that contribute to northern objectives or involve the North in a national program, provided that the northern component of the expenditure can realistically be identified.

The annual northern expenditure plan includes territorial government expenditures under hospital and medical care insurance plans as well as federal government expenditures for providing health services in the North. A portion of the federal expenditures is financed through amounts received from the territorial insurance plans and, as such, there is some overlap in the data.

It should be noted that an element of judgement had to be applied in making the allocation of expenditures by northern objective. By its nature, this data category is subjective. For this reason, agencies surveyed were urged to seek advice from senior-level program managers to obtain the best judgement possible in these areas.

## *Exclusions from the Survey Data*

While the annual northern expenditure plan represents the most comprehensive data available on government spending in the North, some federal agencies have been excluded from the survey even though they may operate northern-related programs. This is because data on indirect expenditures — that is, those which may contribute to northern objectives, but which have a primary thrust directed elsewhere and a northern component which cannot firmly and realistically be identified — are not included in the survey.

The expenditures of certain agencies whose operations are considered to be "special items" are excluded from the data tables. These special items include (a) forces of the Department of National Defence assigned for defence of the North but stationed in southern Canada (a relatively high expenditure); (b) payments to agencies whose operations are of a quasi-commercial nature, namely to the Northern Transportation Company Limited by Transport Canada and to the Northern Canada Power Commission by the Department of Indian and Northern Affairs (loans for capital expenditures and advances for working capital); and (c) activities reported as long-range research (because the application of research results is expected to be at least two years away).

Information on the expenditures and operations of these agencies is presented in summary form in appendices 1 and 2 to this document.

\* The term "agency" (when not otherwise modified) includes federal government departments, agencies and Crown corporations, and the governments of the two territories.

### *Adjustments for Inter-agency Transfers*

An inter-agency transfer takes place when funds are provided by one reporting agency to another without the recipient agency providing any goods or services to be used or consumed by the agency providing the funds. The recipient agency is thus free to administer the disposition of funds for their intended purpose. The most common forms of such inter-agency transfers are grants, contributions or loans.

The Annual Northern Expenditure Plan is designed to indicate northern expenditures by the agency that has final responsibility for managing them. This means that transfers from one agency to another appear as the expenditure of the agency that ultimately disburses the funds.

### *Adjustments for Inter-Agency Sales and Purchases*

Limitations in financial accounting systems make a certain amount of double counting unavoidable. Such double accounting occurs when one agency purchases goods or services from another agency and includes the purchase cost in its reported expenditures while, at the same time, the selling agency reports the cost of providing the goods or services as part of its expenditures.

Since the purchasing agency obtains the goods or services in order to carry out its programs and to promote certain northern objectives, the cost should be included in its expenditures by northern objective, and economic function. However, since the selling agency actually administers the expenditure in providing the goods or services, it is most appropriate that the cost be included as part of its reported expenditures by object of expenditure.

In line with this approach, sales to other agencies were deducted from the selling agency's gross expenditures in compiling the tables showing allocations by northern objective, and economic function.

### *Adjustments to Data Previously Reported*

For a number of reasons, data for the years prior to 1983/84 may differ from the data in previous annual northern expenditure plans. Planned data for a given year are derived from the Main Estimates, which are spending plans subject to change because of shifts in priorities. Planned data become forecast data the following year and are revised up to the time of the survey. Forecast data become actual data the following year, and in so doing, may change. In addition, some actual and forecast figures are later adjusted for errors, omissions, or agency reorganizations identified since the compilation of the previous year's report.

### **Interaction of Northern Objectives and Agency Program Objectives**

Reference has been made to the value of the annual northern expenditure plan in fostering greater cohesion in northern expenditure planning. The main focus of the plan, of course, is on those activities which contribute to the achievement of the national objectives for northern Canada.

The objectives of governments, however, are multi-faceted, diverse and inter-related. For example, many federal agencies whose activities support established northern objectives have responsibilities for meeting national or program objectives which are distinct from the national objectives for the North. In such cases, flexibility has to be applied in meeting non-northern objectives independent of northern concerns. It is recognized, however, that where the national purpose being served by a given agency or program must take precedence over the implications for northern objectives, the manner in which expenditures are executed may often be modified to enhance achievement of northern objectives without sacrifice to the other purposes being served.

# Total Northern Spending

The federal and territorial governments report total planned expenditures of \$1,428.6 million for 1984/85 — an increase of \$73 million or 5.4% over a recent forecast of total 1983/84 spending.

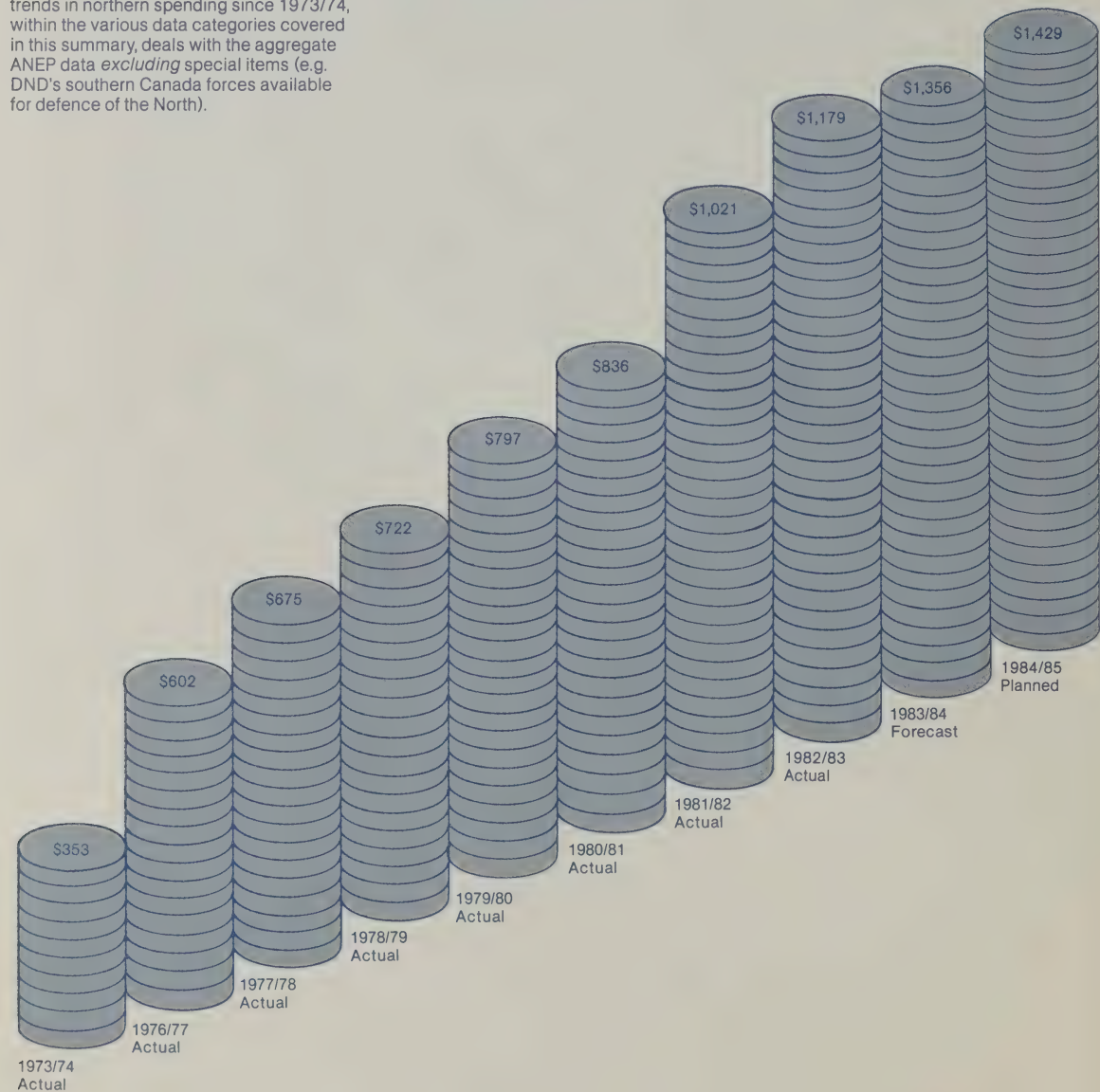
The 1984/85 expenditure plan and trends in northern spending since 1973/74, within the various data categories covered in this summary, deals with the aggregate ANEP data *excluding* special items (e.g. DND's southern Canada forces available for defence of the North).

The graphic below indicates the trend in annual northern expenditures since 1973/74, showing the percentage change from year to year.

The increase for 1984/85 on a *plan-to-plan* basis is 12.8%.

## Total Northern Spending (\$ millions) 1973/74 to 1984/85

Current Dollars



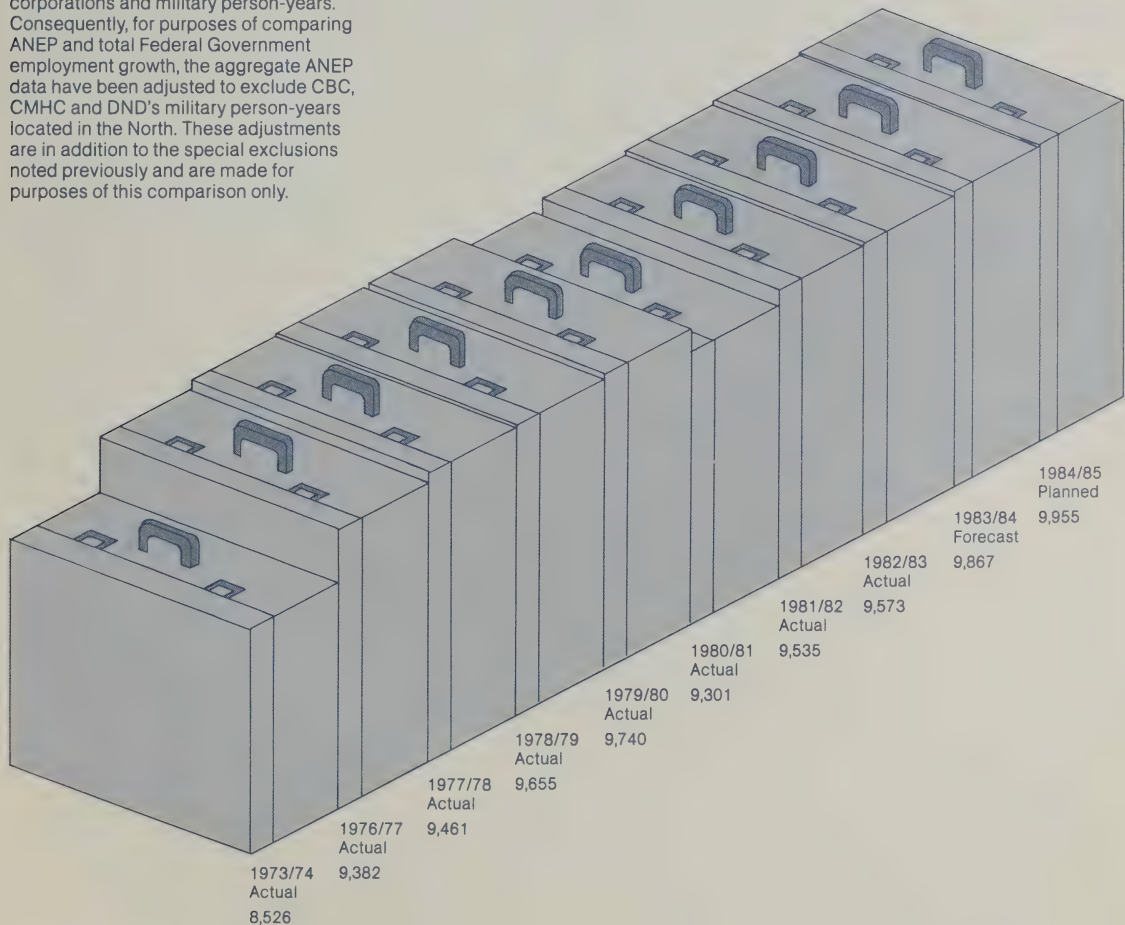
# Total Northern Employment

The federal and territorial governments plan to utilize 9,955 person-years in 1984/85 with respect to northern-related programs and activities — an increase of 83 person-years or 0.9% from a recent forecast of manpower utilization for 1983/84.

Total Federal Government employment comprises the personnel resources of departments and agencies which are subject to Treasury Board control, excluding proprietary crown corporations and military person-years. Consequently, for purposes of comparing ANEP and total Federal Government employment growth, the aggregate ANEP data have been adjusted to exclude CBC, CMHC and DND's military person-years located in the North. These adjustments are in addition to the special exclusions noted previously and are made for purposes of this comparison only.

The person-years reported for special items which are excluded from the aggregate employment data pertain to DND's southern Canada forces and various Long-Range Research activities.

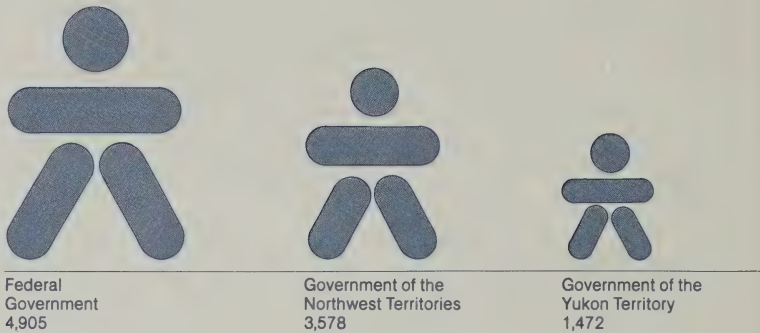
The employment levels associated with NCPC and NTCL are not reported in the ANEP as special items or otherwise. See Appendices 1 and 2 for information in this regard.



**Total Northern Employment (Person-Years) — 1973/74 to 1984/85**

# Employment by Agency

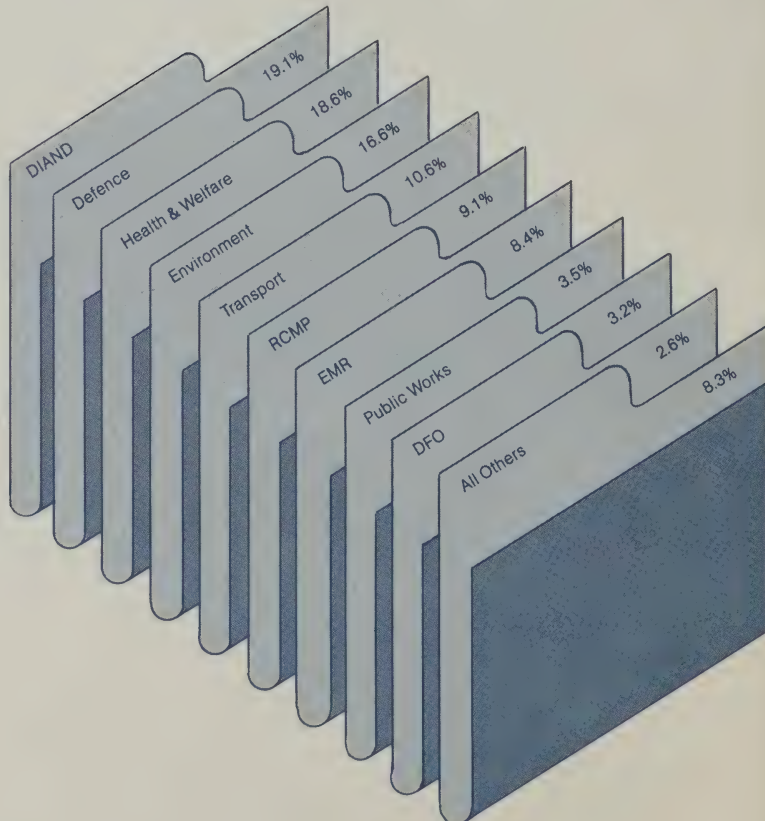
The following chart illustrates the distribution of the total 1984/85 planned employment level between the federal and territorial governments and shows how the federal share is divided among the major federal agencies.



**Total Employment: 9,955**

## Planned Employment (Person Years) for 1984/85 by Level of Government and Major Federal Agency

The agency manpower levels reported for 1973/74 and 1981/82 to 1984/85, with the distribution of total employment in each year, are shown in the table below. Figures represent actual utilization for 1973/74, 1981/82 and 1982/83, a recent forecast for 1983/84 and the planned or authorized person-years for 1984/85.



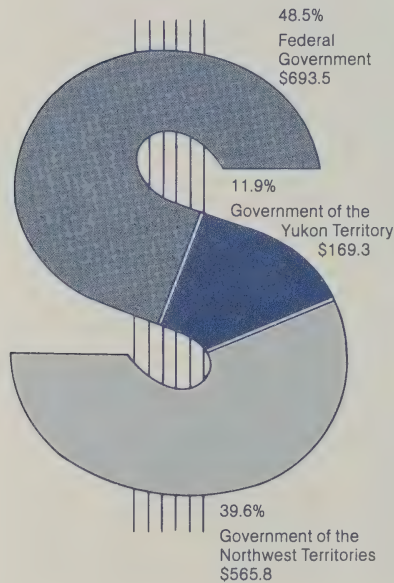
**Trend in Employment (Person-Years)  
and Percentage Distribution (%) by  
Agency**

Agency	1973/74 Actual		1981/82 Actual		1982/83 Actual		1983/84 Forecast		1984/85 Planned	
	#	%	#	%	#	%	#	%	#	%
Federal										
DIAND	906	20.2	869	17.9	908	19.2	914	18.7	939	19.1
Defence	995	22.2	859	17.6	786	16.7	932	19.1	910	18.6
Health & Welfare	780	17.4	845	17.3	845	17.9	791	16.2	815	16.6
Environment	397	8.8	451	9.3	472	10.0	492	10.1	519	10.6
Transport	407	9.1	444	9.1	431	9.1	447	9.2	447	9.1
RCMP	259	5.8	384	7.9	407	8.6	413	8.5	414	8.4
EMR	210	4.7	177	3.7	170	3.6	178	3.7	173	3.5
Public Works	170	3.8	173	3.6	164	3.5	152	3.1	156	3.2
Fisheries & Oceans	94	2.1	100	2.1	122	2.6	137	2.8	125	2.6
Post Office	106	2.3	112	2.3	120	2.5	120	2.5	120	2.5
CEIC	39	0.9	114	2.3	127	2.7	130	2.7	119	2.4
PSC	-	-	83	1.7	81	1.7	81	1.7	81	1.7
Justice	8	0.2	17	0.4	22	0.5	21	0.4	21	0.4
CMHC	5	0.1	16	0.3	14	0.3	16	0.3	16	0.3
Revenue	16	0.4	15	0.3	15	0.3	16	0.3	16	0.3
Communications	10	0.2	11	0.2	14	0.3	13	0.3	12	0.3
RIE	-	-	6	0.1	6	0.1	8	0.2	8	0.2
Museums	-	-	8	0.2	10	0.2	7	0.1	6	0.1
Sec. of State	-	-	-	-	4	0.1	4	0.1	5	0.1
Labour	-	-	2	0.0	2	0.0	2	0.0	2	0.0
Nor Pipeline Agency	-	-	4	0.1	4	0.1	2	0.0	1	0.0
CBC	83	1.8	179	3.7	-	-	-	-	-	-
Veterans' Affairs	-	-	-	-	-	-	-	-	-	-
Finance	-	-	-	-	-	-	-	-	-	-
Fed. Judicial Affairs	-	-	-	-	-	-	-	-	-	-
<b>Total</b>	<b>4,485</b>	<b>100.0</b>	<b>4,869</b>	<b>100.0</b>	<b>4,724</b>	<b>100.0</b>	<b>4,876</b>	<b>100.0</b>	<b>4,905</b>	<b>100.0</b>
Federal	4,485	52.6	4,869	51.1	4,724	49.4	4,876	49.4	4,905	49.3
NWTG	2,803	32.9	3,155	33.1	3,411	35.6	3,544	35.9	3,578	35.9
YTG	1,238	14.5	1,511	15.8	1,438	15.0	1,447	14.7	1,472	14.8
<b>Total</b>	<b>8,526</b>	<b>100.0</b>	<b>9,535</b>	<b>100.0</b>	<b>9,573</b>	<b>100.0</b>	<b>9,867</b>	<b>100.0</b>	<b>9,955</b>	<b>100.0</b>

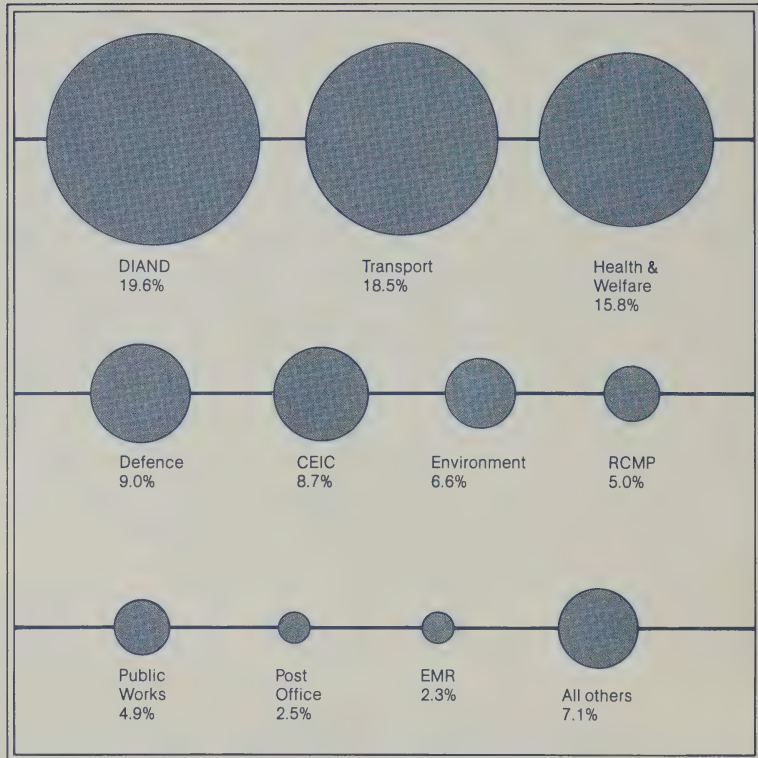
# Expenditure by Spending Agency

The chart below displays the federal and territorial governments' shares of the total \$1,428.6 million planned for 1984/85 and shows how the federal share is distributed among the major federal agencies.

**Total Spending: \$1,428.6**



## Planned Expenditure (\$ millions) for 1984/85 by Level of Government and Major Federal Agency



**Federal Spending: \$693.5**

The following table shows the trend in expenditures by reporting agency and government for 1981/82 to 1984/85 and enables comparison with the base year 1973/74. The figures in italics represent the percentage distribution of the totals. All expenditures are net of transfers, sales and purchases between governments and agencies and are reported according to the agency having the final responsibility for administering the funds.

**Trend in Expenditure (\$ millions) and  
Percentage Distribution (%) by  
Spending Agency**

Agency	1973/74 Actual		1981/82 Actual		1982/83 Actual		1983/84 Forecast		1984/85 Planned	
Federal	\$	%	\$	%	\$	%	\$	%	\$	%
DIAND	67.3	34.1	110.8	22.3	116.7	21.0	136.3	21.1	135.7	19.6
Transport	26.8	13.6	81.4	16.4	99.0	17.8	109.4	16.9	128.0	18.5
Health & Welfare	23.1	11.7	77.5	15.6	91.5	16.4	97.3	15.0	109.6	15.8
Defence	20.2	10.3	52.0	10.5	55.4	10.0	63.6	9.9	62.3	9.0
CEIC	8.5	4.3	24.7	5.0	42.4	7.6	65.1	10.0	60.1	8.7
Environment	10.2	5.2	32.4	6.5	34.0	6.1	37.8	5.9	45.9	6.6
RCMP	6.8	3.4	27.9	5.6	31.2	5.6	32.7	5.1	34.7	5.0
Public Works	13.0	6.6	30.1	6.1	24.6	4.4	24.1	3.7	34.0	4.9
Post Office	3.3	1.7	8.6	1.7	15.2	2.7	16.4	2.5	17.6	2.5
EMR	6.4	3.3	13.4	2.7	14.0	2.5	15.3	2.4	15.7	2.3
RIE	-	-	5.7	1.1	3.9	0.7	8.6	1.3	14.3	2.0
Fisheries & Oceans	2.7	1.4	7.0	1.4	9.6	1.7	9.7	1.5	9.2	1.3
Sec. of State	1.9	0.9	4.7	0.9	5.6	1.0	7.7	1.2	9.2	1.3
CMHC	0.5	0.2	2.6	0.5	5.7	1.0	13.8	2.1	8.6	1.2
PSC	-	-	2.3	0.5	2.7	0.5	3.4	0.5	3.5	0.5
Justice	0.2	0.1	0.9	0.2	1.0	0.2	1.1	0.2	1.2	0.2
Revenue	0.5	0.2	0.9	0.2	0.9	0.2	1.5	0.2	1.1	0.2
Communications	0.6	0.3	0.8	0.2	0.9	0.2	0.7	0.1	0.7	0.1
Labour	0.2	0.1	0.4	0.1	0.6	0.1	0.6	0.1	0.7	0.1
Veterans' Affairs	0.3	0.2	0.5	0.1	0.5	0.1	0.6	0.1	0.6	0.1
Fed Judicial Affairs	0.1	0.1	0.2	0.0	0.3	0.0	0.4	0.1	0.5	0.1
Museums	0.2	0.1	0.3	0.0	0.4	0.1	0.3	0.0	0.2	0.0
Nor Pipeline Agency	-	-	0.3	0.1	0.4	0.1	0.3	0.0	0.1	0.0
CBC	3.3	1.7	11.4	2.3	-	-	-	-	-	-
Finance	1.0	0.5	-	-	-	-	-	-	-	-
<b>Total Federal</b>	<b>197.1</b>	<b>100.0</b>	<b>496.8</b>	<b>100.0</b>	<b>556.5</b>	<b>100.0</b>	<b>646.7</b>	<b>100.0</b>	<b>693.5</b>	<b>100.0</b>
Federal	197.1	55.8	496.8	48.7	556.5	47.2	646.7	47.7	693.5	48.5
NWTG	115.4	32.7	397.0	38.9	480.4	40.7	539.0	39.8	565.8	39.6
YTG	40.7	11.5	127.2	12.4	142.2	12.1	170.1	12.5	169.3	11.9
<b>Total</b>	<b>353.2</b>	<b>100.0</b>	<b>1,021.0</b>	<b>100.0</b>	<b>1,179.1</b>	<b>100.0</b>	<b>1,355.8</b>	<b>100.0</b>	<b>1,428.6</b>	<b>100.0</b>

# Expenditure by Northern Objective

Expenditure data by Northern Objective are based on the informed judgements of reporting agencies. Also included are amounts which are considered to fall under the category of Administration and Support and which are not, therefore, allocated to specific objectives.

Following is a brief description of the National Objectives for Northern Canada approved by the Federal Government in 1971:

1 *Quality of Life* — To provide for a higher standard of living, quality of life, and equality of opportunity for Northern residents by methods which are compatible with their own preferences and aspirations.

2 *Economic Growth* — To encourage viable economic development within the regions of the Northern Territories so as to realize their potential contribution to the national economy and the material well-being of Canadians.

3 *Sovereignty and Security* — To maintain Canadian sovereignty and security in the North.

4 *Protection of Environment* — To maintain and enhance the Northern environment with due consideration to economic and social development.

5 *Evolution of Government* — To further the evolution of self-government in the Northern Territories.

6 *Social and Cultural Development* — To realize the potential contribution of the Northern Territories to the social and cultural development of Canada.

7 *Leisure and Recreation* — To develop fully the leisure and recreational opportunities in the Northern Territories.

The chart below shows how the total planned expenditures for 1984/85 are distributed among the Northern Objectives, based on the allocations reported for each ANEP activity.

## Planned Expenditure (\$ millions) for 1984/85 by Northern Objective

**Total Spending: \$1,428.6**



The category *Administration and Support* includes activities which contribute to the Northern Objectives by supporting other activities which contribute to these objectives (construction and maintenance of government buildings, financial and personnel services, etc.). In accordance with the ANEP survey methodology, these expenditures are identified separately rather than arbitrarily pro-rated among the other activities.

The following table indicates the overall dollar and percentage distribution of total expenditures among the Northern Objectives for various years. Trends in expenditure distributions over the ten-year period are indicated graphically below.

### Trend in Expenditure (\$ millions) and Percentage Distribution (%) by Northern Objective

The following table provides the dollar and percentage allocations to the Northern Objectives for each of the Federal, NWT and YT governments. The objectives are in descending order based on the 1984/85 planned allocations of each government.

As noted previously, Administration and Support expenditures generally support more than one ANEP activity. For this reason they are identified separately, rather than arbitrarily pro-rated to other activities. The extent to which expenditures are allocated to this category depends

largely on the accounting systems and organizational structures of individual reporting agencies. As such, the data do not provide a valid basis for making inter-agency comparisons of Administration and Support expenditures.

**Trend in Expenditure (\$ millions) and Percentage Distribution (%) by Northern Objective**

Northern Objective	1973/74 Actual		1981/82 Actual		1982/83 Actual		1983/84 Forecast		1984/85 Planned	
	\$	%	\$	%	\$	%	\$	%	\$	%
<b>Federal:</b>										
Quality of Life	62.8	31.9	182.9	36.8	217.3	39.0	278.5	43.1	294.5	42.5
Economic Growth	66.4	33.7	131.9	26.6	152.9	27.5	184.8	28.6	210.3	30.3
Protection of Environ	18.6	9.5	53.9	10.8	60.9	10.9	67.1	10.4	64.8	9.4
Sov and Security	24.9	12.6	64.2	12.9	71.5	12.9	64.0	9.9	62.6	9.0
Admin and Support	16.5	8.3	32.2	6.5	30.9	5.6	25.8	4.0	34.2	4.9
Soc and Cult Devel	4.5	2.3	21.4	4.3	12.9	2.3	15.2	2.3	14.6	2.1
Leisure and Rec'n	1.3	0.6	7.0	1.4	6.9	1.2	7.5	1.1	8.5	1.2
Evolution of Gov't	2.1	1.1	3.3	0.7	3.2	0.6	3.8	0.6	4.0	0.6
<b>Total Federal</b>	<b>197.1</b>	<b>100.0</b>	<b>496.8</b>	<b>100.0</b>	<b>556.5</b>	<b>100.0</b>	<b>646.7</b>	<b>100.0</b>	<b>693.5</b>	<b>100.0</b>
<b>NWTG:</b>										
Quality of Life	70.0	60.6	244.6	61.6	305.8	63.6	345.2	64.0	365.4	64.6
Admin and Support	29.9	25.9	97.9	24.7	115.1	24.0	122.8	22.8	124.6	22.0
Economic Growth	8.2	7.1	33.9	8.5	36.6	7.6	41.8	7.8	45.4	8.0
Evolution of Gov't	4.1	3.6	9.6	2.4	10.9	2.3	11.4	2.1	11.8	2.1
Leisure and Rec'n	1.8	1.6	5.0	1.2	5.3	1.1	9.6	1.8	10.5	1.9
Protection of Environ	1.2	1.0	4.7	1.2	5.3	1.1	6.2	1.1	6.2	1.1
Soc and Cult Devel	0.2	0.2	1.4	0.4	1.4	0.3	2.0	0.4	2.0	0.3
<b>Total NWTG</b>	<b>115.4</b>	<b>100.0</b>	<b>397.0</b>	<b>100.0</b>	<b>480.4</b>	<b>100.0</b>	<b>539.0</b>	<b>100.0</b>	<b>565.9</b>	<b>100.0</b>
<b>YTG:</b>										
Quality of Life	20.0	49.0	70.2	55.1	82.4	58.0	87.4	51.4	90.1	53.2
Economic Growth	11.6	28.6	21.1	16.6	21.9	15.4	37.2	21.9	32.8	19.4
Admin and Support	5.1	12.6	14.7	11.6	17.8	12.5	22.5	13.2	23.3	13.7
Evolution of Gov't	3.0	7.5	15.5	12.2	14.5	10.2	16.3	9.6	17.2	10.2
Protection of Environ	0.3	0.7	3.7	2.9	3.6	2.5	4.4	2.6	3.6	2.1
Leisure and Rec'n	0.5	1.2	1.6	1.2	1.6	1.1	1.8	1.0	1.8	1.1
Soc and Cult Devel	0.2	0.4	0.4	0.4	0.4	0.3	0.5	0.3	0.5	0.3
<b>Total YTG</b>	<b>40.7</b>	<b>100.0</b>	<b>127.2</b>	<b>100.0</b>	<b>142.2</b>	<b>100.0</b>	<b>170.1</b>	<b>100.0</b>	<b>169.3</b>	<b>100.0</b>

# Expenditure by Economic Function

Each ANEP is allocated to one of thirteen Economic Functions. However, certain activities (e.g. long range research) are treated as special items and are excluded from the chart and table. The distribution of the total expenditures planned for 1984/85 among the twelve other Economic Functions is displayed in the chart below.

## Planned Expenditure (\$ millions) for 1984/85 by Economic Function

**Total Spending: \$1,428.6**

General Government Services \$335.5

Transportation \$213.4

Welfare \$208.2



Health \$176.4

Education \$137.5

Economic Development Other \$114.4

Local Government \$75.9

Defence \$50.5

Culture and Recreation \$38.4

Other:

2.3% Economic Development (Human) \$33.5

1.9% Short Range Research \$26.5

1.3% Communications \$18.4

## Trend in Expenditure (\$ millions) and Percentage Distribution (%) by Economic Function

Economic Function	1973/74 Actual		1981/82 Actual		1982/83 Actual		1983/84 Forecast		1984/85 Planned	
Total Spending:	\$	%	\$	%	\$	%	\$	%	\$	%
General Gov't Services	78.8	22.3	245.5	24.0	275.0	23.3	305.0	22.5	335.5	23.5
Transportation	75.4	21.4	149.6	14.7	165.2	14.0	196.7	14.5	213.4	14.9
Welfare	39.0	11.0	126.1	12.4	160.8	13.6	211.6	15.6	208.2	14.6
Health	26.8	7.6	107.8	10.6	145.8	12.4	158.0	11.7	176.4	12.4
Education	41.4	11.7	109.6	10.7	129.6	11.0	132.1	9.7	137.5	9.6
Economic Development (Other)	23.7	6.7	80.9	7.9	91.7	7.8	112.8	8.3	114.4	8.0
Local Government	15.8	4.5	62.6	6.1	66.3	5.6	71.2	5.3	75.9	5.3
Defence	13.9	3.9	41.6	4.1	46.4	3.9	53.4	3.9	50.5	3.5
Culture and Recreation	6.5	1.9	29.4	2.9	26.8	2.3	34.0	2.5	38.4	2.7
Economic Development (Human)	6.9	1.9	26.3	2.6	31.2	2.6	38.5	2.8	33.5	2.3
Short-Range Research	17.7	5.0	20.8	2.0	24.2	2.1	25.4	1.9	26.5	1.9
Communications	7.3	2.1	20.8	2.0	16.1	1.4	17.1	1.3	18.4	1.3
<b>Total</b>	<b>353.2</b>	<b>100.0</b>	<b>1,021.0</b>	<b>100.0</b>	<b>1,179.1</b>	<b>100.0</b>	<b>1,355.8</b>	<b>100.0</b>	<b>1,428.6</b>	<b>100.0</b>

**1983/84 Forecast Expenditure By  
Spending Agency and Economic  
Function (\$000's)**

Economic Function	Educa- tion	Health	Welfare	Trans- portation	Com- muni- cations	Eco- nomic Devel- opment (Human)	Eco- nomic Devel- opment (Other)	Defence	Local Govern- ment	Short- Range Re- Search	Culture and Recrea- tion	General Govern- ment Services	Total
Spending Agency													
Federal Agencies:													
CMHC	-	-	13,826	-	-	-	-	-	-	12	-	-	13,838
CBC	-	-	-	-	-	-	-	-	-	-	-	-	-
Communications	-	-	-	-	712	-	-	-	-	-	-	-	712
Emp. & Imm.	-	-	44,905	-	-	19,980	176	-	-	-	-	-	65,061
EMR	-	-	-	-	-	-	159	-	-	5,675	-	9,473	15,307
Environment	-	-	-	-	-	-	-	-	-	6,997	13,255	17,603	37,855
Fed. Judicial Affairs	-	-	-	-	-	-	-	-	-	-	-	400	400
Finance	-	-	-	-	-	-	-	-	-	-	-	-	-
Fisheries & Oceans	-	-	-	2,408	-	-	71	-	-	7,174	-	-	9,653
DIAND	3,446	-	5,336	22,047	-	6,805	69,095	-	4,067	2,519	-	22,941	136,256
Justice	-	-	-	-	-	-	-	-	-	-	-	1,118	1,118
Labour	-	-	-	-	-	93	-	-	-	-	-	550	643
National Defence	-	-	-	-	-	-	-	53,429	-	3,054	-	7,161	63,644
Health & Welfare	-	72,930	24,093	-	-	-	-	-	-	-	250	-	97,273
National Museums	-	-	-	-	-	-	-	-	-	-	275	-	275
National Revenue	-	-	-	-	-	-	-	-	-	-	-	1,526	1,526
Nor. Pipeline Agency	-	-	-	288	-	-	-	-	-	-	-	-	288
Post Office	-	-	-	-	16,356	-	-	-	-	-	-	-	16,356
PSC	-	-	-	-	-	2,888	-	-	-	-	-	468	3,356
Public Works	-	-	-	12,525	-	-	-	-	-	-	-	11,630	24,155
RIE	-	-	-	-	-	-	8,588	-	-	-	-	-	8,588
RCMP	-	-	-	-	-	-	-	-	-	-	-	32,756	32,756
Sec. of State	-	-	-	-	-	-	-	-	-	-	7,457	213	7,670
Transport	-	-	-	109,400	-	-	-	-	-	-	-	21	109,421
Veterans' Affairs	-	-	552	-	-	-	-	-	-	-	-	-	552
Total Federal Government	3,446	72,930	88,712	146,668	17,068	29,766	78,089	53,429	4,067	25,431	21,237	105,860	646,703
Government of the NWT	94,323	64,278	107,175	19,213	-	8,683	20,272	-	52,186	-	10,550	162,312	538,992
Government of the Yukon	34,333	20,841	15,759	30,806	-	-	14,392	-	14,936	-	2,253	36,797	170,117
<b>Total</b>	<b>132,102</b>	<b>158,049</b>	<b>211,646</b>	<b>196,687</b>	<b>17,068</b>	<b>38,449</b>	<b>112,753</b>	<b>53,429</b>	<b>71,189</b>	<b>25,431</b>	<b>34,040</b>	<b>304,969</b>	<b>1,355,812</b>

# Appendix I

## Northern Canada Power Commission

The following information has been extracted from the 35th Annual Review (for the year ended March 31, 1983) of the Northern Canada Power Commission.

The Northern Canada Power Commission is a Federal Crown Corporation which operates under authority of the Northern Canada Power Commission Act. It is concerned with the planning, construction and management of public utilities, primarily electrical, on a commercial basis.

The Commission is the principal producer of electricity north of 60° and operates the main transmission networks in the Yukon and Northwest Territories. Heat, water and sewerage service utilities are operated at Inuvik, N.W.T. Wholesale heat supply is provided to the Northwest Territories Government for distribution at Frobisher Bay.

It is a requirement of the Authorizing Act that operations of the Commission shall be self-sustaining within each rate zone as defined in the Act. Consequently, rates charged for utilities supplied must provide sufficient revenue to cover interest and principal payments on loans made to the Commission, operating, maintenance, administrative and all other expenses, and contingency allowances.

### Statement of Operations for the Year Ended March 31: (\$ millions)

	1973/74 Total	1979/80 Total	1980/81 Total	1981/82 Total	1982/83 Total
Income	15.6	49.1	55.9	73.4	79.3
Expenses	11.9	35.1	42.4	59.0	57.2
Interest on Loans	3.3	14.0	13.9	14.0	14.8
Net Income (Loss)	0.4	0.0	(0.4)	0.4	7.3
<i>Number of Employees</i>	<i>311</i>	<i>304</i>	<i>330</i>	<i>327</i>	<i>342</i>

# Appendix II

## Northern Transportation Company Limited

(and subsidiary companies)

The following information has been extracted from Annual Reports of the Northern Transportation Company Limited, (1973 to 1982).

Northern Transportation Company Limited has operated throughout the Mackenzie River system for 49 years, along the Western Arctic coast and islands for 26 years, and along the west coast of Hudson Bay for eight years. The company's marine operations have been the principal mode of transportation for community freight needs and logistic support for oil, gas and mineral exploration and development. The marine operations are complemented by Grimshaw Trucking and Distributing Ltd., a wholly-owned trucking subsidiary.

## Consolidated Statement of Income and Expenses\*

for the year ended December 31:

\$ (millions)

	1973	1979	1980	1981	1982
<b>Income</b>					
— Operating Revenue	16.4	31.5	34.4	42.0	43.1
— Parliamentary Appropriation**	-	0.8	0.8	0.6	1.1
— Other (Interest, Capital Gains)	0.1	2.0	2.9	3.9	3.3
	16.5	34.3	38.1	46.5	47.5
<b>Expense</b>					
— Operating	18.3	28.9	30.7	39.8	38.4
— Other (Interest on Debt)	2.3	3.1	3.0	3.0	2.9
	20.6	32.0	33.7	42.8	41.3
<b>Net Profit (Loss) before deferred Income Tax</b>	(4.1)	2.3	4.4	3.7	6.2
Less Income Tax (Credit)	(2.1)	0.2	2.1	3.5	2.0
<b>Net Profit (Loss)</b>	(2.0)	2.1	2.3	0.2	4.2
<b>Number of Employees</b>	1,127	763	713	738	768

\* *Principles of Consolidation* — The consolidated financial statements include the accounts of the company and its subsidiaries, Northern Offshore Limited (formerly Yellowknife Transportation Company Limited) and Grimshaw Trucking and Distributing Ltd., both of which are wholly-owned.

\*\* *Parliamentary Appropriation* — Parliament approved these payments to the company to defray the excess of costs incurred over revenue earned from the Keewatin resupply operations (1975 to 1982) and Great Bear Lake resupply operation (1978-1981). 1982 figures relate only to Keewatin resupply.

# In Conclusion

Serious readers requiring more detailed information for research purposes may order copies of the internal *Annual Northern Expenditure Plan* by writing to:  
Indian and Northern Affairs Canada  
Northern Policy Directorate  
Ottawa, Ontario K1A 0H4

Readers interested in further information on the range of government activities and programs in the North might also send for the following publications:

*Annual Report — DIAND*

*Northern Natural Resource Development: Requirements, Procedures and Legislation*

*A Guide to Territorial Land Use Regulations*

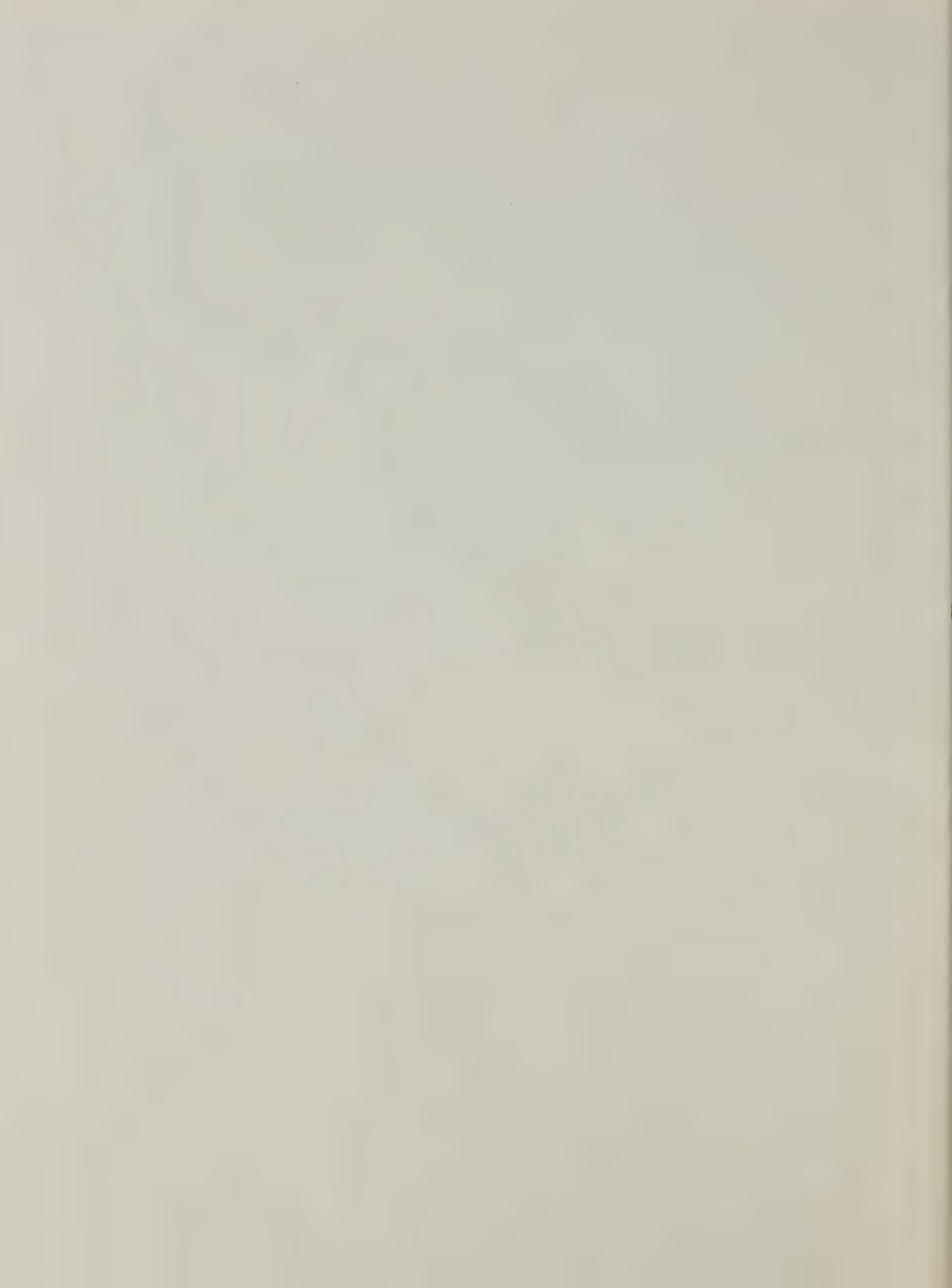
*A Survey of Public Review Hearings in Northern Canada*

*The Lancaster Sound Region: 1980-2000, (The Green Paper)*

*Mines and Minerals Activities*

*Oil and Gas Activities*

by writing:  
Public Enquiries  
Indian and Northern Affairs Canada  
Ottawa, Ontario K1A 0H4











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